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B A C K G R O U N D I N F O R M A T I O N

to the development of a

COORDINATED PROGRAM STRATEGY

S O U T H E R N O N T A R I O



Ministry of
Natural
Resources

Hon. Frank S. Miller
Minister

Dr. J. K. Reynolds
Deputy Minister

1977 09 01

A Word of Explanation

This document represents Phase I of a coordinated program strategy or strategic land-use for Southern Ontario. The strategic land use plan will state in broad and comprehensive terms how the Ministry of Natural Resources wishes to use or influence the use of land in Ontario. It will be the overall guideline for coordinating the land using programs of the Ministry.

The purpose of the Phase I document is to provide background information necessary to the development and assessment of policies, objectives and targets for the Ministry in Southern Ontario. Phase I is not a plan.

Phase II of the planning process will involve development and assessment of policies, objectives and targets for the Ministry in Southern Ontario. Public participation will be encouraged.

Phase III will identify land requirements and will outline a strategy for achieving Ministry objectives.

Preface

The responsibilities of the Ministry of Natural Resources are summarized in the following general goal statement:

To provide opportunities for outdoor recreation and resource development for the continuous social and economic benefit of the people of Ontario and to administer, protect and conserve public lands and waters.

To emphasize and clarify the Ministry role in land use planning it should be explained that the Ministry of Natural Resources, unlike many ministries, has a broad connection with land throughout Ontario. The dominant concern is for open space generally, it includes all the land and water not built upon. It extends both inside and outside urban boundaries. It includes both publicly and privately owned land and water. Taken in total, this open space is the resource that must be effectively allocated, protected, and managed so that it will continue to provide, in appropriate balance and in adequate amounts, the benefits that can contribute to the present and future wellbeing of society.

Public lands and waters make up close to 90 percent of the total area of the Province and 45 percent of Southern Ontario; the Ministry has responsibility and authority for the planning and managing these lands and waters. It is also responsible

for ensuring that a wide range of benefits are derived from Ontario's natural resources. A major portion of Ministry objectives are achieved by the use of public lands. However, in those parts of Southern Ontario where private land pre-dominate, the Ministry increasingly will have to enlist the co-operation of municipalities and individual landowners to achieve significant portions of its objectives. Examples of the latter are the production of wildlife and forest products and the extraction of sand and gravel.

Until recently, most of the plans prepared were single purpose, local and short term. Today, with increasing demands for land, the need to co-ordinate the planning approach is widely recognized. This led to the concept of a Ministry of Natural Resources Coordinated Program Strategy, and the Strategic Land Use Planning Program.

The strategy will be developed within the framework of the regional planning program of the Ontario Government, and will serve as the Ministry's major contribution to that program.

The strategy is being prepared in two parts. Part One is the Ministry of Natural Resources overall policy document. Part Two will consist of the plans of each of three planning regions - Northwestern, Northeastern and Southern Ontario.

The Ministry of Natural Resources has various means of implementing a land use plan, such as its legislative responsibilities for public land management and acquisition, its ability to license and regulate use, and its contribution to plans of other Provincial agencies and municipalities that will indirectly assure actions supportive or complementary to Ministry concerns.

MINISTRY OF NATURAL RESOURCES
ADMINISTRATIVE REGIONS
AND
PLANNING REGIONS



ADMINISTRATIVE REGIONS

- 1 NORTHWESTERN
- 2 NORTH CENTRAL
- 3 NORTHERN
- 4 NORTHEASTERN
- 5 ALGONQUIN
- 6 EASTERN
- 7 CENTRAL
- 8 SOUTHWESTERN

SCALE
50 0 50 100 150
Miles

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I. Southern Ontario in Perspective

Southern Ontario Planning encompasses a part of the Province that is bounded on the west and south by the lower Great Lakes, on the east by the Ottawa and St. Lawrence Rivers, and on the north by a line just south of Lake Nipissing and the French and Mattawa Rivers.

The area is made up of the four most southerly Administrative Regions of the Ministry of Natural Resources: Algonquin, Central, Eastern and Southwestern. These in turn are divided into twenty-two Administrative Districts (Map 1).

Southern Ontario contains Metropolitan Toronto, ten Regional Municipalities, two Districts and thirty-one Counties (Map 2). One hundred and eleven of the 125 provincial electoral ridings are located here.

Southern Ontario Planning has an area of 72,815 square miles (188,590 square kilometres), 17 percent of the Province. The combination of climate, landform, system of waterbodies and accessibility have historically attracted and supported the greater part of the population and industrial production of Ontario.

Ninety percent of the Province's population, some 6.9 million people, live in Southern Ontario. The population is dominantly urban. Eighty-three percent of the people live in 209 centres with populations of 1000 or more.

The land area is 47,390 square miles (122,740 square kilometres), including over 90 percent of the farm acreage of the Province. There are 23,125 square miles (59,895 square kilometres) of Great Lakes surface which supports a major part of the largest fresh-water fishery in the world, and which are a major water transportation system. In addition, Southern Ontario has about 2,300 square miles (5,957 square kilometres) of inland lakes and many thousands of miles of rivers and streams.

The forest area is highly productive, and very diverse in the kinds of wood and products it can produce in relation to the rest of Ontario.

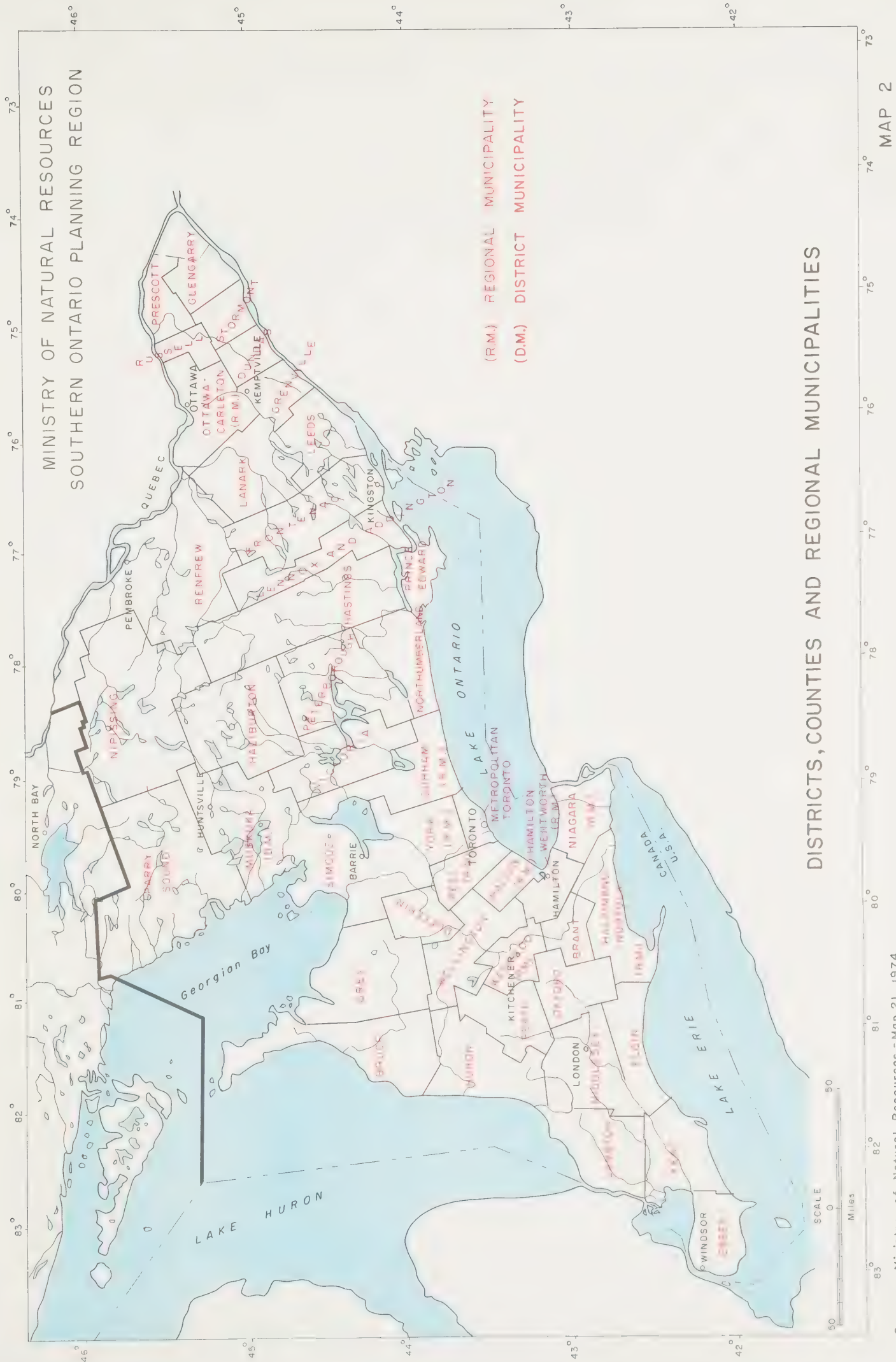
The Planning Region has a varied and pleasing landscape; it has a diversity of habitat for wildlife; and, it is rich in mineral and aggregate resources.

The emphasis in Southern Ontario over the last 150 years on utilization of the natural resources, settlement, and industrial development has helped to produce one of the



MINISTRY OF NATURAL RESOURCES
SOUTHERN ONTARIO PLANNING REGION

ADMINISTRATIVE REGIONS AND DISTRICTS
OF
THE MINISTRY OF NATURAL RESOURCES



highest standards of living in the world. This has had its costs in terms of environmental damage and effects on air, water and land.

During the last fifty years, particularly, a pattern of concentration of activity and investment has emerged. Industry has increasingly concentrated around the western end of Lake Ontario and a few other large urban communities. People and institutions, following this lead, have similarly concentrated in these locations. Transportation and other linear facilities will likely continue to be located in a corridor between Montreal and Windsor just north of the Great Lakes. These services occupy considerable land, however their principal effect on land use has been to locate and further concentrate development in an area of great value for both urban and agricultural uses.

Serious pressures are now developing which threaten the attractiveness and productivity of the area and the inherent capability of the land resource to meet the needs of a growing society. Social and economic problems associated with urban crowding have developed, with lack of employment opportunities in certain areas and depopulation in others.

Agriculture is being intensified on the highly productive lands of the southwest and is being phased out of the less productive lands to the north and east. At the same time, **productive** agricultural lands are being lost due to urbanization.

With this increased urbanization and industrialization environmental problems have increased significantly.

Intensive recreation development has occurred in many parts of the Planning Region. Close to the major urban centres significant competition for recreation opportunities has developed due to a combination of high demand, private ownership and overuse.

Developing stresses, like those briefly mentioned, indicate a need for rational planning.

II. Settlement and Population

The purpose of the Ministry of Natural Resources plan is to serve the people of Ontario. The characteristics of the population are therefore of primary concern.

This chapter traces the historic and current patterns of human settlement in Southern Ontario and examines projections, and the implication to the Ministry.

A large and continually increasing proportion of the present population and development is situated around the western end of Lake Ontario, and at Kingston, Ottawa, London and Windsor.

1. Early Euro-Canadian Settlement Patterns

Southern Ontario has revealed evidence of human occupation that can be traced back to the last ice age. From that time until the early seventeenth century, numerous groups of indigenous peoples characterized by a variety of cultures and technologies lived in Southern Ontario. At the time of the first European penetration in the seventeenth century, the principal native peoples encountered were representatives of Algonkian and Iroquoian language groups.

Europeans - Certain events and dates are significant to the history of the European settlement in the area. In 1607 Champlain became the first white man to see Lake Ontario; in 1639 Saint Marie, the first white settlement, was established near present day Midland; and, in 1668 a mission was set up in the area of Prince Edward County. Fort Cataraqui (Kingston) was founded in 1673, Fort Niagara in 1678, Fort Rouille (Toronto) in 1749, while the Detroit River settlement dates from 1701.

On the whole, however, little settlement occurred during the French occupation. Most immigrants were occupied with the fur trade until the mid-eighteenth century.

United Empire Loyalists - In 1783, United Empire Loyalists from the United States began arriving in Kingston and Niagara. This influx of population can be regarded as the beginnings of significant European settlement in Southern Ontario. For the next 150 years, proximity to transportation routes and availability of government land were the prime locational factors.

These settlement patterns are the basis of the present population distribution in Southern Ontario. An understanding of the evolution of this distribution is help-

ful to planning for future growth centres in Southern Ontario, and is explored in the next few pages.

Those United Empire Loyalists who remained in Ontario spread westward from Niagara and Kingston, and settled first along the shores of Lake Ontario, and later Lake Erie. A second wave of Americans followed much the same pattern but also used York (now Toronto) as an entry point.

2. Nineteenth Century Settlement

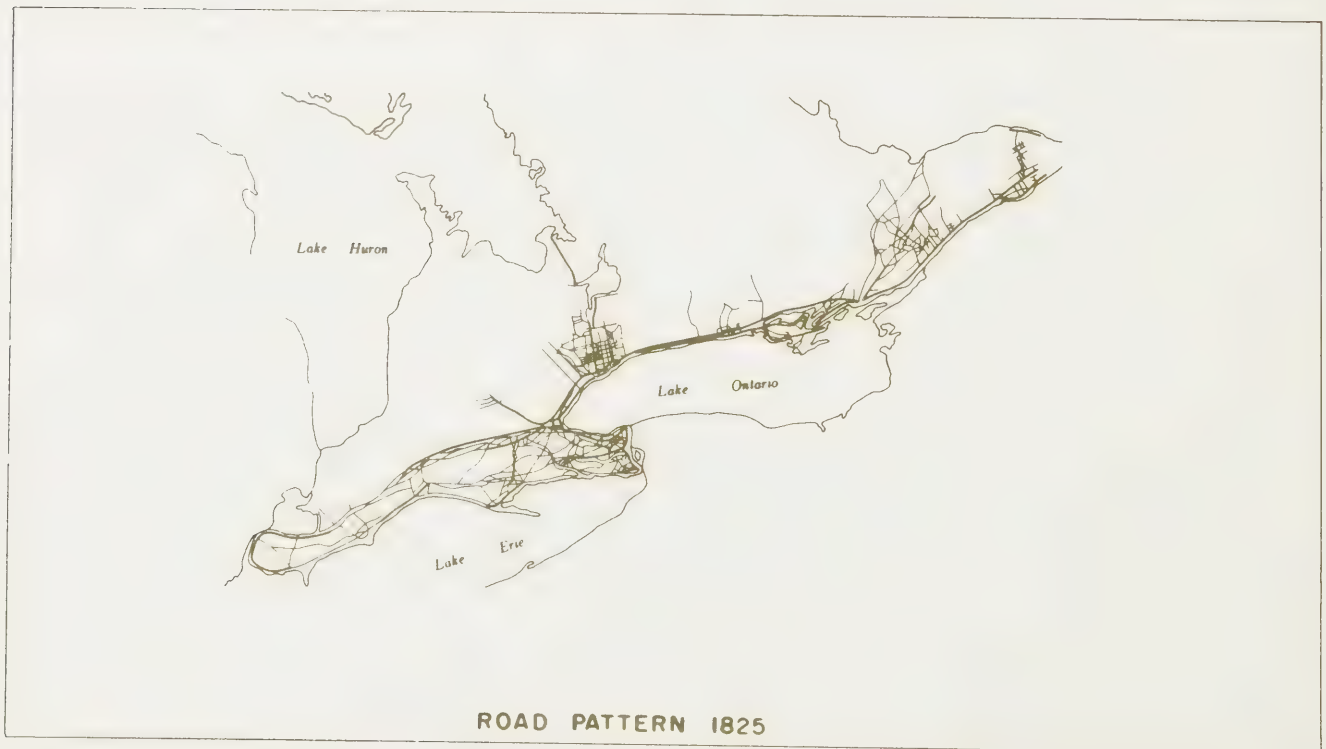
By 1810, 80 percent of Upper Canada's 75,000 people were displaced Americans. The War of 1812 ended the thrust of American immigration; after this date, the main source of settlers was the British Isles.

The opening of land for settlement began with the alienation of Indian claims by the Crown. Land surveys were then carried out by the government. The countryside was laid out into more or less rectangular townships which were then divided into lots and concessions.

Since surveys tended to precede occupance, their effect on the subsequent landscape patterns of rural Ontario was wide-spread and persistent. Born of the survey

were such features as the alignment and spacing of farmsteads along the fronts of the concessions, the rectangular shapes of fields and properties and allowances for roads at regular intervals.

John Graves Simcoe, the Province's first governor, developed a network of roads which were to influence the development of the Province for decades to come, and to leave a mark in the present population distribution. The Danforth Road from east to west took settlement away from the waters edge for the first time, and the development of Yonge Street at York directed the first hinterland expansion in Ontario. This road pattern is shown on Map 3.



Source: STUDIES IN CANADIAN GEOGRAPHY - ONTARIO 1972

MAP 3

Occupance of the land was indiscriminate of physical conditions. It took place on all types of land surface, both along the lakeshores and in the interior. In the initial stages of settlement, environmental advantages, even when perceived, were outweighed by other considerations such as accessibility and government direction. As settlements matured, the situation changed and choice and initiative were increasingly directed to the physical components of a complex which included soil and drainage conditions, availability of fresh water, proximity to a navigable waterway, the proximity of neighbours, and access to roads, towns, and mills.

A special feature associated with, and in some cases affecting, the distribution of population was its ethnic and religious composition. Here again, government policy provided the major impetus. Early townships were assigned in separate blocks to Catholic Highlanders, Scottish Presbyterians, German Calvinists, German Lutherans, and Anglicans, and to populations made up of "loyalist" and disbanded soldiers. A whole county, Glengarry in eastern Ontario, was set aside for a disbanded regiment of Scottish Highlanders, a settlement intended as a counter-weight to American influence. The major inland settlement before 1825 was established in the Kitchener-Waterloo

area by another distinct group, German speaking Mennonites from Pennsylvania. The desire of the community to stay together, to establish itself beyond the alien influences of other communities and to obtain large quantities of land cheaply led to the only instance of sizeable settlement removed from major waterbodies.

In 1825, only 3 urban places had populations over 1000. By 1851 the number had increased to 38, and the total population had grown to 952,000 people (Map 4).

Trade - Increase in population and improvements in navigation, in turn, affected production and export of Ontario's main commercial products, wheat and timber. Wheat steadily increased in acreage and production until 1850's. It was easily the dominant crop as it had been from the early years of settlement. However, the Province's most important trade commodity was timber. From 1830 to 1850, the value of timber exports regularly exceeded that of all agricultural exports. The timber trade was promoted by British government policy dating back to the substantial preferences given colonial timber in the early 1800's. The largest trade developed on the Ottawa, the only place in Ontario with a fast flowing river leading directly to a major seaport.



SETTLEMENT PATTERN 1825



SETTLEMENT PATTERN 1851



SETTLEMENT PATTERN 1881

Transportation - During early development natural waterways were the chief means of transport. Other means of transportation were examined and canals seemed the most attractive. The building of canals on the Rideau for military purposes was to constitute the most expensive undertaking by the British in North America. Unfortunately it was of little strategic, or other value. The route was a roundabout one, of minor use for trade and for attracting settlement. Today it stands out as one of Ontario's major recreation resources.

The Welland Canal, opened in 1829, was conceived as a commercial venture, not a military one. It was built by private capital, but later purchased by the government. The canal connects Lakes Erie and Ontario; by so doing it gave access to the upper Lakes and also facilitated movement of population to western Ontario by forming links to areas west of Hamilton. As well as making Southern Ontario more accessible to settlement, the Welland Canal was a direct impetus to population growth in that many of the immigrant labourers brought to the area to build the canal remained there after its completion.

The St. Lawrence Canal was opened in 1905 allowing commercial traffic between the Atlantic and the Great Lakes,

thus giving further impetus to the growth of Southern Ontario.

Railway building began in the 1850's, bringing with it new conditions for town and rural growth. Location on the railway became a prime requisite for development since it tended to spur industrialization and led to a boom psychology in those towns on the railway. Lack of growth in some centres can be directly attributed to their not being on the railway. Perhaps the most significant illustration of the effect of the railway is Toronto. Its position as the most important rail centre aided its rise to Provincial capital and largest city in Ontario. By centring the import-export trade in Toronto, the city was to become the financial capital of the Province.

The pattern of industrial growth set by agricultural machinery and steel production in the 1860's was followed by a wider range of manufacturing activity. Expansion in production, concentration in location and the appearance of American branch plants became major features of the growth.

In summary, early settlement was strung out over long distances, close to water and to the United States

(Map 4). It was organized from centres selected by military authorities, so that from the beginning rural and urban settlement appeared together. The urban component grew as part of an export economy based on wheat, flour, and wood. Before 1851, a cluster of urban places, most of them ports, had been established around the western end of Lake Ontario. Even with the growth of manufacturing, the best prospects for growth remained tied to shipping facilities. The major features of the settlement pattern in the late nineteenth century were the persistence of the cluster, the alignment of population with water and land transportation routes, and the extension of settlement into the interior (Map 4).

At the close of the nineteenth century the Planning Region had reached a population of 1.9 million.

3. The Twentieth Century

By the time the 1971 Census was taken Southern Ontario had a population of 6.9 million people. This was almost 90 percent of the provincial total of 7.7 million, and 33 percent of the national total of 21.6 million. The population continued to grow to 7.2 million in 1973. Immigration throughout the twentieth century has resulted in a remarkable ethnic

and cultural diversity in the Planning Region.

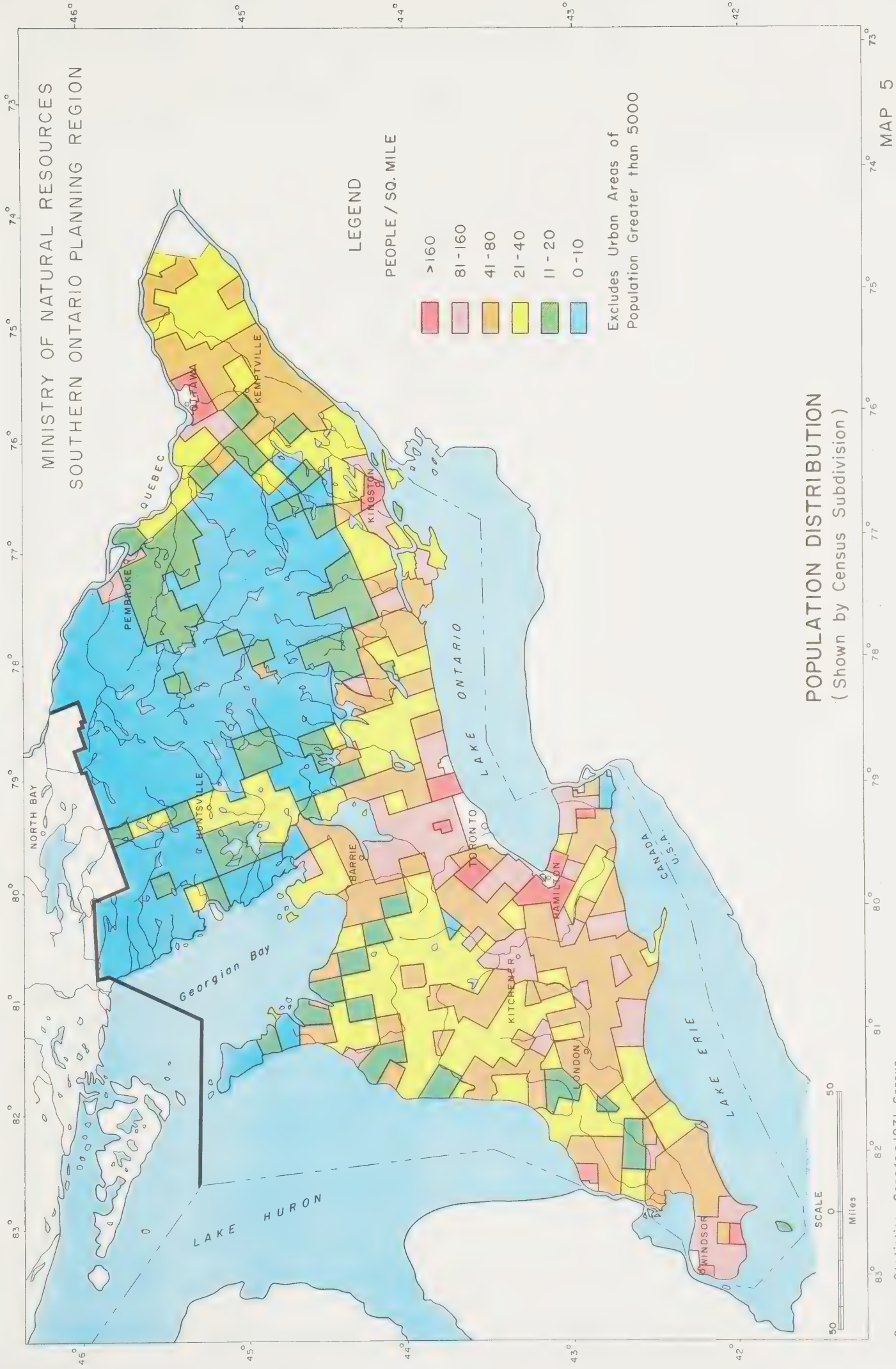
a) Population - Numbers and Distribution

The population of Southern Ontario is concentrated in a small land area, as illustrated by Map 5 which shows population density for rural census subdivisions, and by Map 6 which shows the distribution of urban centres which have populations of 1,000 or more. Table 1 shows the population size and density in the Ministry of Natural Resources' four Administrative Regions. Nearly 60 percent of the population is located in the Central Region, primarily within the boundaries of Metropolitan Toronto.

Population density varies considerably in Southern Ontario from less than 5 people per square mile (3.1 per square kilometres) in agricultural areas to as high as 30,000 in metropolitan core areas.

Table 2 shows the distribution of the 209 communities in Southern Ontario with populations of 1000 or more.

Table 3 lists the population of urban and rural areas in Southern Ontario. It shows that 79 percent of the people live in urban communities of 1,000 or more and



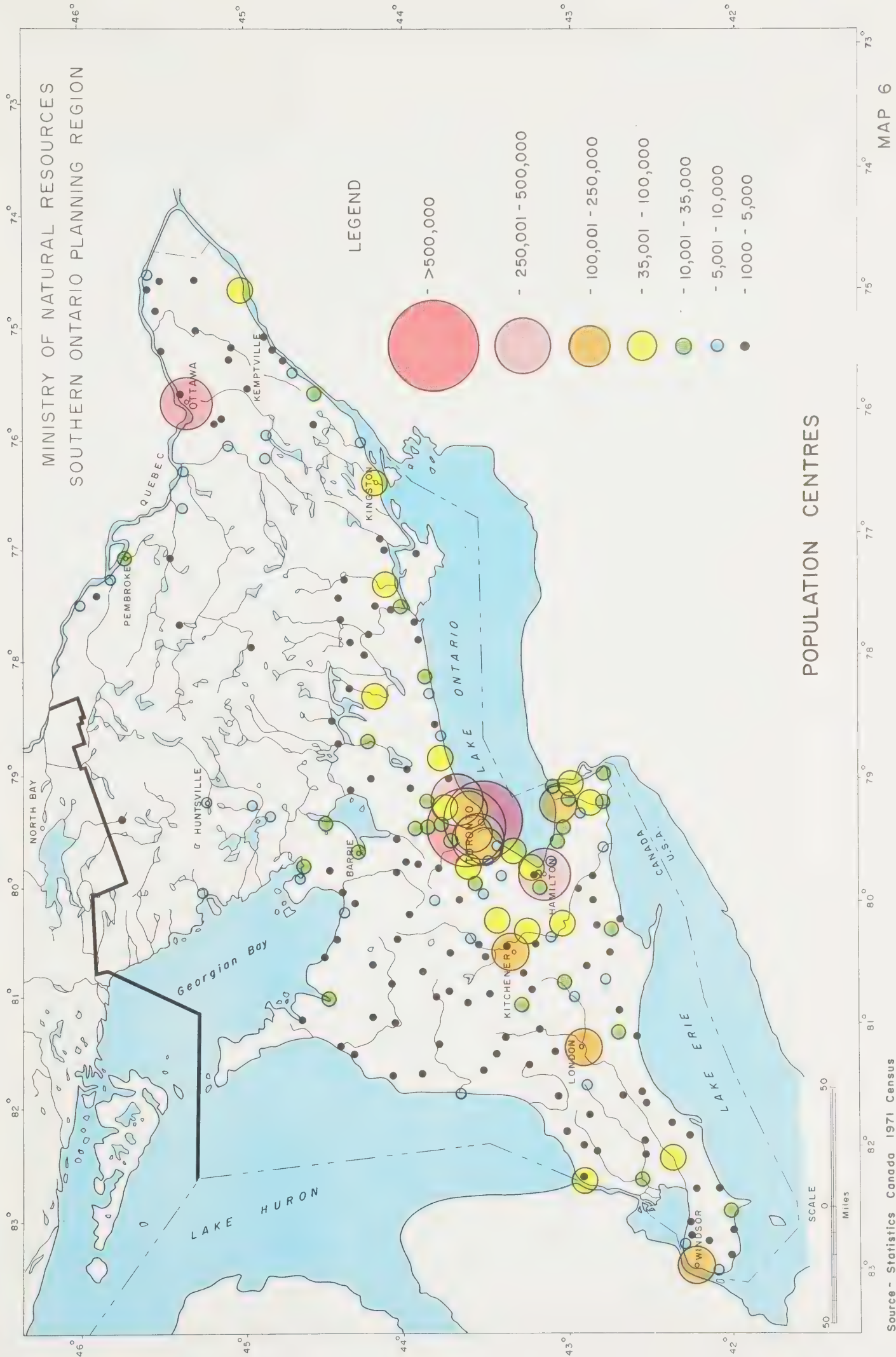


Table 1

Population: Numbers and Density
by Administrative Region

Administrative Region	% of Southern Ontario Population	1971 ('000)	% of Province	Land Area Square Miles (Km ²)	Density per sq. Mile (Km ²)
Algonquin	2.5	173.8	2.2	14,495 (37,542)	12 (4.6)
Central	65.0	4,503.8	58.5	10,810 (27,997)	417 (161)
Eastern	14.4	995.3	12.9	10,645 (27,570)	94 (36)
Southwestern	18.1	1,250.1	16.2	11,440 (29,629)	109 (42)
Southern Ontario Planning Region	100	6,923.0	89.9	47,390 (122,740)	146 (56)
Ontario		7,703.1	100	412,582 (1,068,587)	19 (7.2)

Source: Derived from 1971 Census

Table 2

Numbers of Communities Over 1000 Population
by Administrative Region

Administrative Region	Total	500+ M	100-500 M	30-100 M	10-30 M	5-10 M	1-5 M
Algonquin	15	0	0	0	1	8	6
Central	88	2	8	13	19	14	32
Eastern	38	0	1	3	3	6	25
Southwestern	68	0	2	2	7	5	52
Southern Ontario Planning Region	209	2	11	18	30	33	115

Source: Derived from 1971 Census

Table 3
Population of Urban and Rural Areas¹
Southern Ontario Planning Region

Administrative Region	Total 1971 Pop'n.	URBAN AREAS										RURAL AREAS										
		Total Urban	%	500M +	%	100- 500M	%	30- 100M	%	10- 30M	%	5- 10M	%	1- 5M	%	Total Rural	%	Non-Farm	%	Farm	%	
Algonquin Central Eastern Southwestern	173.8	80.5	46								15.9	9	56.1	32	8.5	5	93.4	54	78.0	45	15.4	9
	4503.8	4015.6	90	1217.0	27	1553.8	36	747.9	16	320.4	7	105.0	3	71.5	1	488.2	10	390.5	8	97.7	2	
	995.3	593.2	60			302.3	29	141.2	17	56.9	5	39.8	4	53.0	5	402.0	40	301.5	30	100.5	10	
	1250.1	804.2	64			421.4	33	92.9	8	124.3	10	33.0	3	132.6	10	445.9	36	272.0	22	173.9	14	
Southern Ontario Planning Region	6923.0	5493.5	79	1217.0	18	2277.5	34	982.0	15	517.5	7	233.9	3	265.6	3	1429.5	21	1042.0	15	387.5	6	

¹Derived from 1971 Census

only 6 percent are rural farm dwellers.

b) Population Characteristics

A number of characteristics of the population are explored which are believed to have a bearing on future resource needs and pressures.

i) Families

Of the provincial population, 87 percent are in family units of two or more, with an average family size of 3.6. Table 4 indicates the family statistics for each Administrative Region.

Table 4

Analysis of Family Structure
by Administrative Region

Administrative Region	Total Pop'n ('000)	Numbers in Families ('000)	Numbers of Family Units ('000)	Individuals Not in Family Units ('000)
Algonquin	173.8	151.2	42.2	22.6
Central	4503.8	3918.3	1093.6	585.5
Eastern	995.3	865.9	241.4	129.4
Southwestern	1250.1	1087.6	303.7	162.5
Southern Ontario Planning Region	6923.0	6023.0	1681.2	900.0

Source: Derived from 1971 Census

ii) Age Composition

Table 5 shows census data, by 5-year age classes for Southern Ontario, and the Administrative Regions.

There appears to be a high proportion of people in the 20 to 44 age classes in urban areas, while older age groups predominate in rural areas.

iii) Educational Attainment

Twenty-nine percent of Southern Ontario residents aged 5 or over are in full-time attendance at an educational institution.

Table 6 shows, for each Administrative Region, the numbers of people who have reached various levels of education.

In general it appears that people in urban areas have higher average levels of education than in rural areas, and that the larger the urban area the higher the average educational attainment.

Table 5

Population by Age Groups
Southern Ontario Planning Region

	Total (000)	Age 0-4		Age 5-14		Age 15-19		Age 20-24		Age 25-44		Age 45-64		Over 65	
		000	%	000	%	000	%	000	%	000	%	000	%	000	%
Administrative Region		Pre-School		Grade School		Secondary School		University/ Early Career		1st Half Career		2nd Half Career		Retirement	
Algonquin	173.8	11.9	7	39.9	23	17.8	10	12.2	7	38.2	22	35.0	20	18.8	11
Central	4503.8	364.9	8	888.5	28	395.7	9	403.1	9	1222.7	27	866.1	19	362.8	7
Eastern	995.3	78.3	8	207.4	21	97.9	10	88.0	9	245.5	25	192.9	19	85.3	9
Southwestern	1250.1	90.5	7	271.5	22	120.5	10	103.6	8	294.0	23	243.5	19	126.5	10
Southern Ontario Planning Region	6923.0	545.6	8	1407.3	20	631.9	9	606.9	9	1800.4	26	1337.5	19	592.4	9

Source: Derived from 1971 Census

Table 6

Population by Educational Attainment
Southern Ontario Planning Region

Administrative Total Pop'n Aged 5 and up '000	FULL TIME SCHOOL ATTENDANCE										OTHER												
	Total '000	%	Less Than Gr. 5 '000	%	Gr. 5-8 '000	%	Gr. 9-13 '000	%	Univ. '000	%	Total '000	%	Less Than Gr. 5 '000	%	Gr. 5-8 '000	%	Gr. 9-13 '000	%	Some Univ. '000	%	Univ. '000	%	
Algonguin	161.9	52.0	32	18.3	11	15.9	10	16.0	10	1.7	1	110.0	68	10.9	7	35.7	22	56.3	35	3.5	2	3.5	2
Central	4138.9	1182.5	29	483.9	12	339.6	8	347.2	8	78.7	2	2949.2	71	231.1	6	725.1	18	1656.6	40	152.5	4	153.9	4
Eastern	917.0	287.5	31	97.2	11	82.0	9	87.2	9	20.9	2	630.0	69	45.2	5	170.3	19	348.8	38	34.4	4	44.1	5
Southwestern	1159.6	350.1	30	123.0	11	103.5	9	105.0	9	16.2	1	809.3	70	58.1	5	274.6	21	442.8	38	31.8	3	29.3	3
Southern Ontario Planning Region	6377.4	1879.1	29	722.4	11	541.0	8	555.4	9	117.5	2	4498.5	71	345.3	5	1178.7	18	2504.5	39	222.2	3	230.8	4

Source: Derived from 1971 Census

iv) Mother Tongue and Ethnic Origin

The numbers of people by mother tongue is given in Table 7 for Southern Ontario and for each Administrative Region.

The majority of people in all parts of Southern Ontario are of Anglo-Saxon origins. In the Eastern Administrative Region 18 per cent of the population is French speaking. The proportion of all other ethnic groups is relatively small in rural areas and smaller urban areas, but is quite high in the larger urban centres, forming, for example, just over half of the population of Metropolitan Toronto.

v) Labour Force

Numbers of People - Table 8 indicates, for Southern Ontario and for each Administrative Region, the size of the labour force. In 1971 there were nearly 5 million people in Southern Ontario aged 15 and older. The participation rate in the labour force was 81 percent for men and 45 percent for women with an average of 64 percent. In numbers, the labour force was 2.0 million men and 1.1 million women, or 3.1 million in all.

Table 7
Estimated Population by Mother Tongue
Southern Ontario Planning Region

Administrative Region	Total '000	English '000	French '000	German '000	Italian '000	Netherlands '000	Polish '000	Ukrainian '000	Other '000
Algonquin	173.8	156	7	3	2	2	3	2	2
Central	4503.8	3513	90	135	3	45	45	45	315
Eastern	995.3	776	179	10	1	10			20
Southwestern	1250.1	1051	38	38	3	13	13	13	50
Southern Ontario Planning Region	6923.0	5495	314	186	3	70	61	58	387

Source: Derived from 1971 Census

Table 8

Participation of Population Aged 15 and Over
in the Labour Force
Southern Ontario Planning Region

Administrative Region	Population '000	Population Age 15 & Up '000	Labour Force '000		Total		Participation Rate % of Persons Aged 15 and Up	
			Male	Female	Male	Female	Male	Female
Algonquin	173.8	122.0	73.0	49.0	24.0	60	76	38
Central	4503.8	3250.4	2122.0	1360.0	762.0	65	82	46
Eastern	995.3	709.6	431.0	275.0	156.0	61	79	45
Southwestern	1250.1	888.1	534.6	346.6	188.0	60	79	43
Southern Ontario Planning Region	6923.0	4970.1	3160.6	2030.6	1130.0	64	81	45

Source: Data derived from 1971 Census.

In recent years the labour force has grown at an annual rate of 3.3 percent. This is somewhat higher than the current rate of population growth. It seems to reflect the entrance into the labour force of the large numbers of people born in the years following 1945, as well as a marked increase in the participation rate of women.

Occupations - The Ontario Economic Atlas, using 1961 Census data, recognized eleven broad categories of jobs. The proportions of the population of each county and large city shown in the atlas have been used, in conjunction with the 1971 labour force data. The resulting numbers of people in each category are estimated, for Southern Ontario and for each Administrative Region, in Tables 9 and 10.

There are marked variations in these figures in different parts of Southern Ontario.

Table 9

Proportion of Labour Force
by Occupational Categories
Southern Ontario Planning Region

Group	% of Labour Force	Estimated Numbers '000
Managerial	9	278
Professional & Technical	10	318
Clerical	15	505
Sales	8	236
Service & Recreation	12	384
Transportation & Communication	6	191
Farmers & Farm Workers	7	226
Loggers, Fishermen, Hunters, Trappers	Less than 1	5
Miners, Quarrymen	Less than 1	2
Craftsmen, Production Workers	27	840
Labourers	6	175
		3160

Source: Derived from Economic Atlas of Ontario and 1971 Census

For example, the proportion of professional, technical, and clerical people is higher in urban than rural areas. The high proportion of farm people in a few counties reflects the absence of large urban areas there, as well as the degree of prosperity of agriculture.

vi) Personal and Family Income

Personal income for the Province in 1971 had a mean value of \$7,250 for men and \$3,079 for women. Family income for the Province had an average value of \$10,661. Visual examination of the 1971 Census data suggests that the figures for Southern Ontario are likely to be two to three percent above the provincial average. The data also suggests that, for any county, average income in urban areas exceeds that of rural areas by up to 20 percent, and that areas with substantial urban components have rural and urban incomes each higher than areas more dominantly rural. The population of larger cities tend to have higher incomes than those of smaller urban areas.

Table 10

Proportion of Labour Force
by Occupational Categories
for Administrative Regions

Group	Administrative Region								Southern Ontario Planning Region	
	Algonquin		Central		Eastern		Southwestern			
	'000	%	'000	%	'000	%	'000	%	'000	%
Managerial	6	9	191	9	38	9	43	8	278	9
Professional & Technical	7	10	212	10	51	12	48	9	318	10
Clerical	6	8	360	17	69	16	70	13	505	16
Sales	4	5	169	8	26	6	37	7	236	8
Service & Recreation	12	17	233	11	69	16	70	13	384	12
Transportation & Communication	6	8	127	6	26	6	32	6	191	6
Farmers & Farm Workers	7	10	106	5	38	9	75	14	226	7
Logger, Fisherman, Hunter, Trapper	<1	1	3	<1	<1	<1	<1	<1	5	<1
Miner, Quarryman	<1	1	<1	<1	1	<1	<1	<1	2	<1
Craftsman, & Production Worker	17	23	594	28	90	21	139	26	840	27
Labourer	6	8	127	6	21	5	21	4	175	6

Source: Derived from Economic Atlas of Ontario and 1971 Census

For persons in Ontario aged 15 and up, 20 percent have no income; 23 percent have under \$2,000 income; 20 percent between \$2,000 and \$5,000; 25 percent between \$5,000 and \$10,000; and 12 percent over \$10,000.

Women in the labour force are generally in the lower income groups.

On a province-wide basis, 8 percent of all families have an income of under \$3,000; 15 percent between \$3,000 and \$6,000; 31 percent between \$6,000 and \$10,000 and 47 percent have incomes of \$10,000 or more.

c) Population Projections

The population of Southern Ontario was 6.9 million in 1971, or 3.6 times the 1901 number of 1.9 million. Government projections, based on somewhat declining rates of both natural increase and net migration, indicate an increase to 10.5 million by 2001, 5 times the 1901 population. Population figures for 1921, 1951, 1971 and the projected population for 2001 for each Administrative Region appear on Table 11.

Figure 1 demonstrates the rate of increase for each Administrative Region as well as for Southern Ontario and the entire Province. The rate of total increase was one to two percent per year between 1901 and 1951, rose to three percent per year between 1951 and 1961, and decreased to two percent between 1961 and 1971. The projections used indicate a gradual decrease to one percent at 2001. However, these figures compounded on an ever-increasing population still represent a very substantial increase in numbers of people.

There have been, and will apparently continue to be, substantial increases in proportions of the population that are urban, and in proportions of the non-urban population that are non-agricultural.

d) Implications of Trends

Increasing numbers of people will likely result in an increasing demand for natural resources.

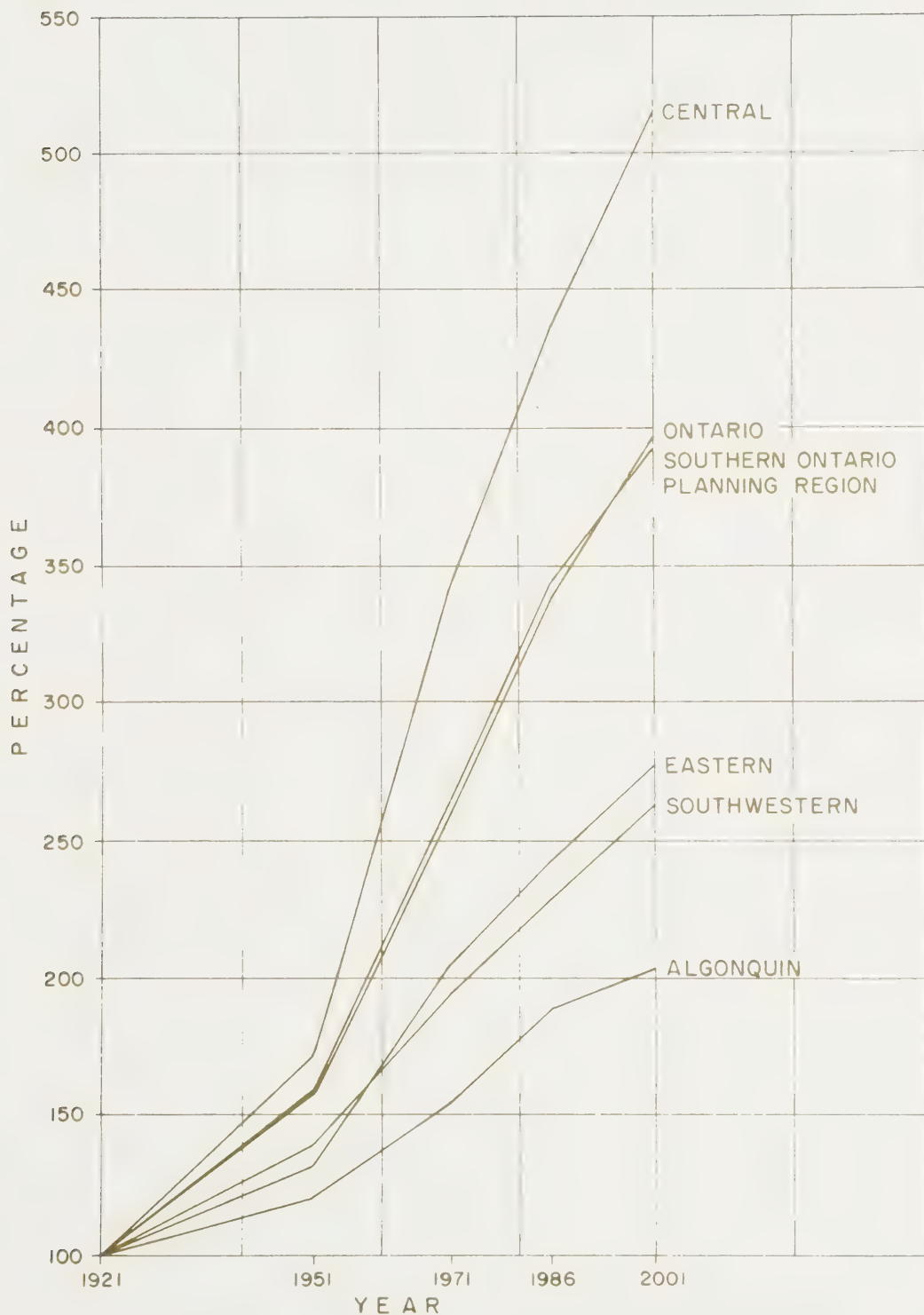
Barring technological advances which substantially increase productivity, and barring loss of productivity through environmental degradation, a resource

Table 11

Population Trends 1901-2001
Southern Ontario Planning Region

	Population		Percentage of Ontario Population	Equivalent Annual Increase %
	Ontario	Southern Ontario Planning Region		
1901	2,182,947	1,902,993	est. 88	.25
1911	2,527,292	2,263,616	est. 88	1.5
1921	2,933,662	2,592,150	88.3	1.5
1931	3,431,683	2,970,908	86.5	1.5
1941	3,787,665	3,368,670	88.9	1.0
1951	4,597,542	4,064,612	88.4	2.0
1961	6,236,992	5,507,838	88.3	3.0
1971	7,783,106	6,924,332	89.9	2.25
1981	9,027,306	8,124,575	est. 90	1.5
1991	10,444,754	9,400,279	est. 90	1.5
2001	11,646,140	10,481,526	est. 90	1

Source: Ministry of Treasury, Economics & Intergovernmental Affairs



POPULATION TRENDS:- Population for Ontario, Southern Ontario Planning Region and each Administrative Region, expressed in Percent of 1921 Population.

FIG. I

that is sufficient to meet today's needs would have to be increased by about 50 percent to meet the same per capita needs by 2001.

This means that there will be increasing competition over land for various uses. There will be continued depletion of non-renewable resources. The concentration of people in urban areas will intensify pressures on land resources close to urban areas for outdoor recreation and open space.

Increases in leisure, in participation in the labour force, income, and perhaps in real purchasing power, will increase the opportunities of urban and other people to seek the satisfaction of these needs.

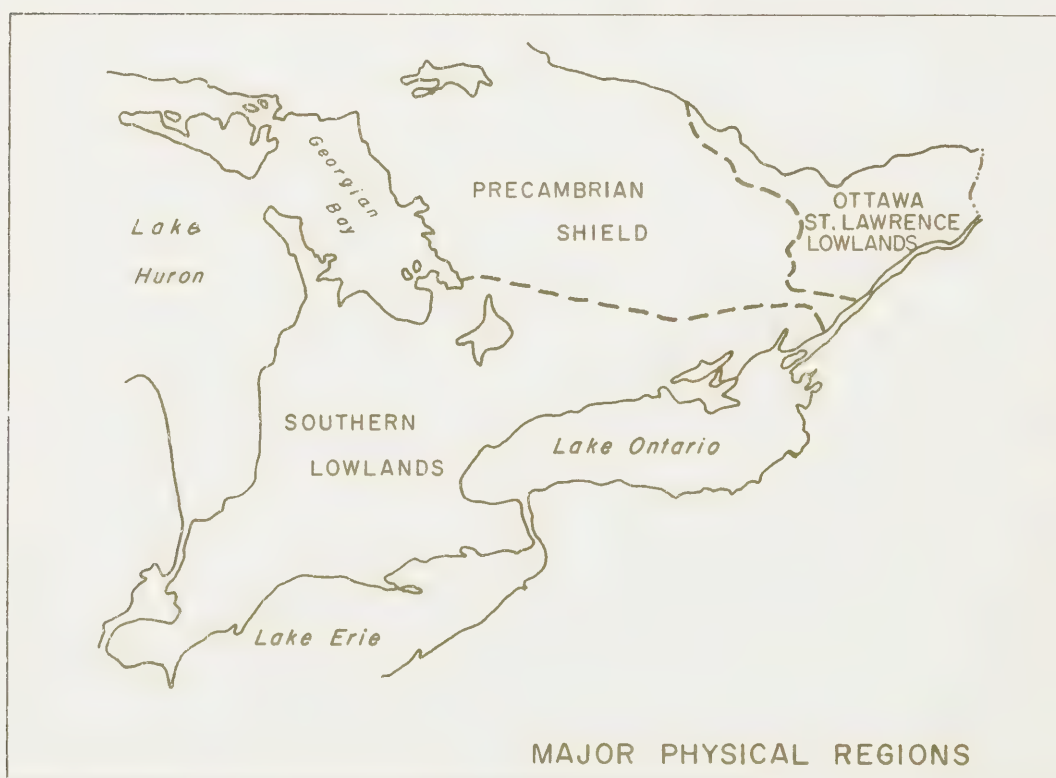
The diversity in ethnic and cultural background, the increase in education and income levels, and the predominance of family structure are likely to influence the benefits sought by the population

To adequately address the needs of a rapidly growing population from a non-urban resource that is diminishing in size, will require an unprecedented intensity of resource protection and management.

III. Natural Setting

Southern Ontario's great diversity of physical, climatic and biological conditions are briefly described in this chapter.

There are four major physical subdivisions which provide a framework for much of the later discussions. For simplicity, they will be called the Precambrian Shield, the Ottawa-St. Lawrence Lowlands, The Southern Lowlands and the Great Lakes (Map 7).



MAP 7

The Precambrian Shield, is an area characterized by hilly topography, crystalline bedrock, generally thin, often absent soil mantle, and abundant lakes. The Ottawa-St. Lawrence Lowlands is the relatively small area lying between the Precambrian Shield and the southeast corner of the Province. It is characterized by low elevation, gentle topography, shallow to deep soil mantle, and few lakes. The Southern Lowlands, a larger area southwest of the Precambrian Shield, has a wide variety of topography, generally deep fertile soils, few lakes, and many stream and river valleys. The Great Lakes constitute the fourth distinctive physical subdivision.

1. Bedrock Geology

Two major kinds of bedrock, Precambrian and Paleozoic, are found in Southern Ontario:

a) Precambrian

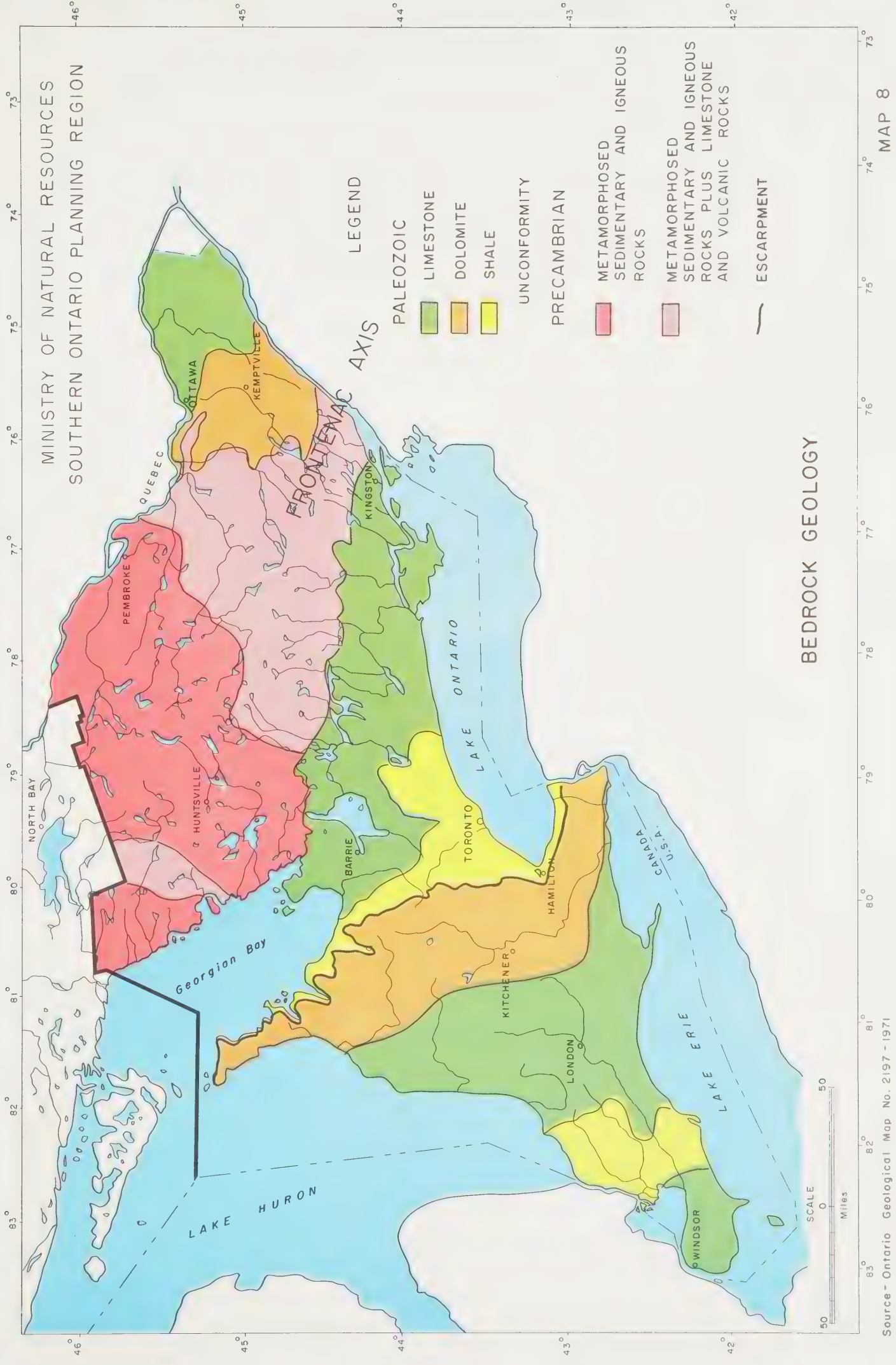
The Precambrian Shield is composed largely of metamorphic and igneous rocks of the Early, Middle and Late Precambrian ages. Three main subdivisions may be made on the basis of geological features (Map 8).

The central area of the Precambrian Shield includes most of the Algonquin uplands and Georgian Bay area. It is the area of minimum mineralization, and is made up largely of metasediments intruded by igneous rocks. The northwest area, relatively small and elongated, extends northeasterly between Parry Sound and Lake Nipissing. It is a potential mineral producing area. The much larger southeast portion, roughly triangular in shape, includes a mixture of igneous and metamorphic rocks which have high mineral potential and are of considerable economic importance. This is the area where most mining occurs in Southern Ontario.

b) Paleozoic

The lowlands portions of Southern Ontario are underlain by relatively flat-lying, sedimentary bedrock of the Paleozoic era. Generally, these rocks are older toward the Frontenac Axis (along the southern edge of the Precambrian Shield) and younger away from it.

Bedrock in the Ottawa-St. Lawrence Lowlands is composed in its eastern half of limestone with some shale and in its western half of dolostone (dolomite) and sandstone.



The Southern Lowlands is further divided into two parts by the Niagara Escarpment. East of the escarpment, the bedrock strata are predominantly limestone toward the Precambrian Shield and shale toward the escarpment. Along the face of the escarpment are beds of shale, sandstone, and dolostone. Immediately above the escarpment, the Paleozoic bedrock may be generalized into four major groups; primarily dolostone with some limestone, sandstone and shale; dominantly limestone; shale; and limestone.

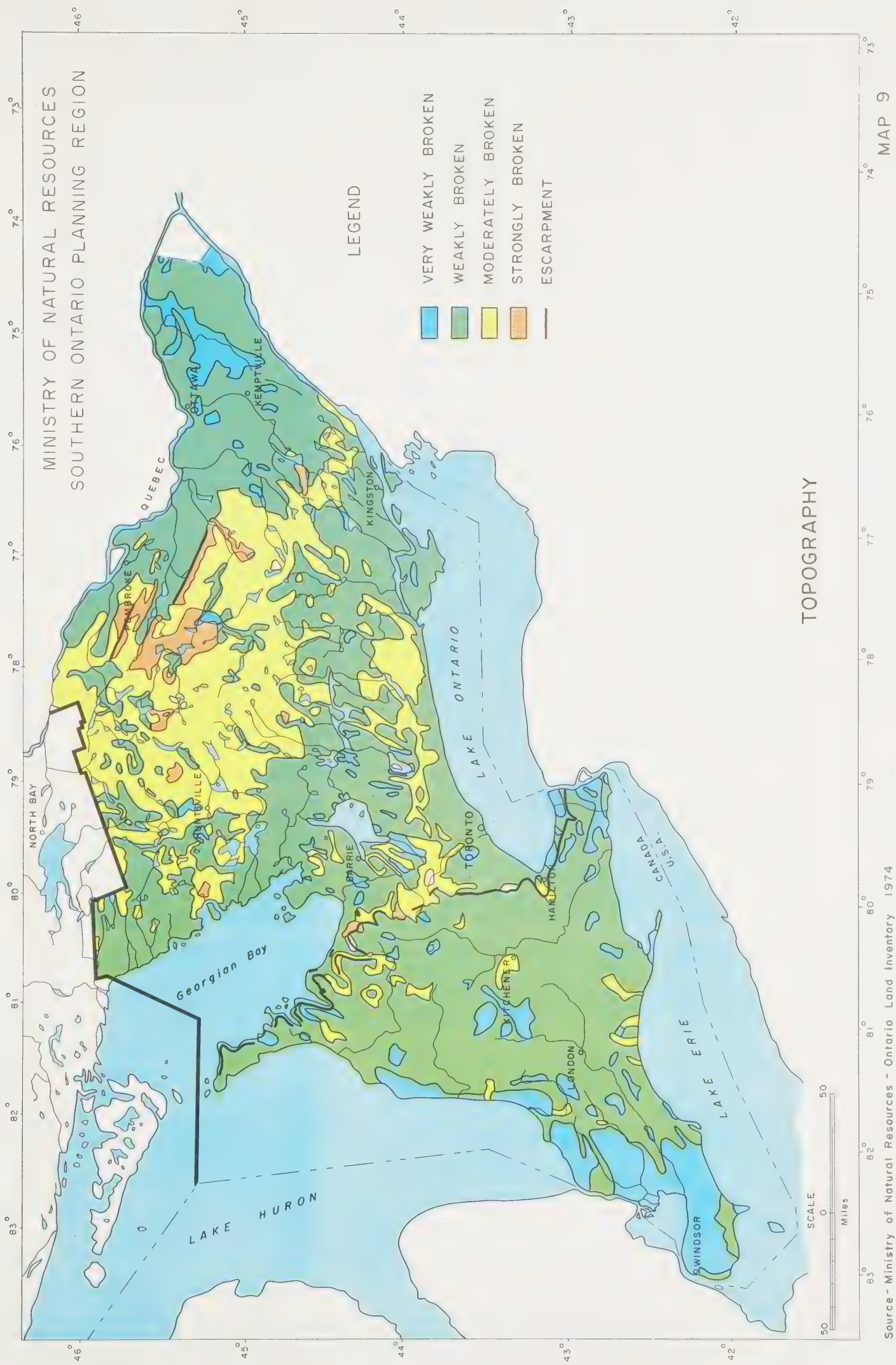
2. Topography and Elevation

The topography of Southern Ontario varies from very weakly to strongly broken (Map 9). Elevations range from less than 150 feet (46 metres) above sea level in the lower Ottawa valley to 1800 feet (549 metres) above sea level in the Algonquin uplands and over 1700 feet (518 metres) along the Niagara Escarpment.

The Precambrian Shield has strongly broken to weakly broken topography. Local topography varies, with elevation changes from as little as 25 feet per mile to 300 feet or more (5 metres per kilometre to 57 metres or more).

The Ottawa-St. Lawrence Lowlands is a gently broken low lying area flanked by strongly broken areas to the north and south just outside the Province. Elevations range between 150 and 500 feet (46 and 153 metres) above sea level with no abrupt changes, apart from places where there is local, sharp valley dissection.

The Southern Lowlands is quite variable. There are distinct areas of flat and gently rolling topography with some strongly broken areas along the Niagara Escarpment. East of the escarpment elevations range from 250 feet (76 metres) at Lake Ontario and 575 feet (175 metres) along Georgian Bay to heights of 1000 to 1220 feet (305 to 366 metres) above sea level. West of the escarpment the land rises from the Great Lakes at 570 feet (174 metres) in a gradual gradient to the rim of the Niagara Escarpment, with a maximum elevation over 1700 feet (518 metres) near Collingwood.



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3. Landform

Southern Ontario landforms are largely the combined result of bedrock formations and of the most recent (Wisconsin) glaciation. The ice sheet, which covered Southern Ontario, and the water bodies which accompanied and followed it, produced an array of landforms which overlies the bedrock to varying depths.

Map 10 illustrates the landform variety and the relationship to the three major physical land subdivisions of Southern Ontario described previously.

a) Rock Knob Uplands

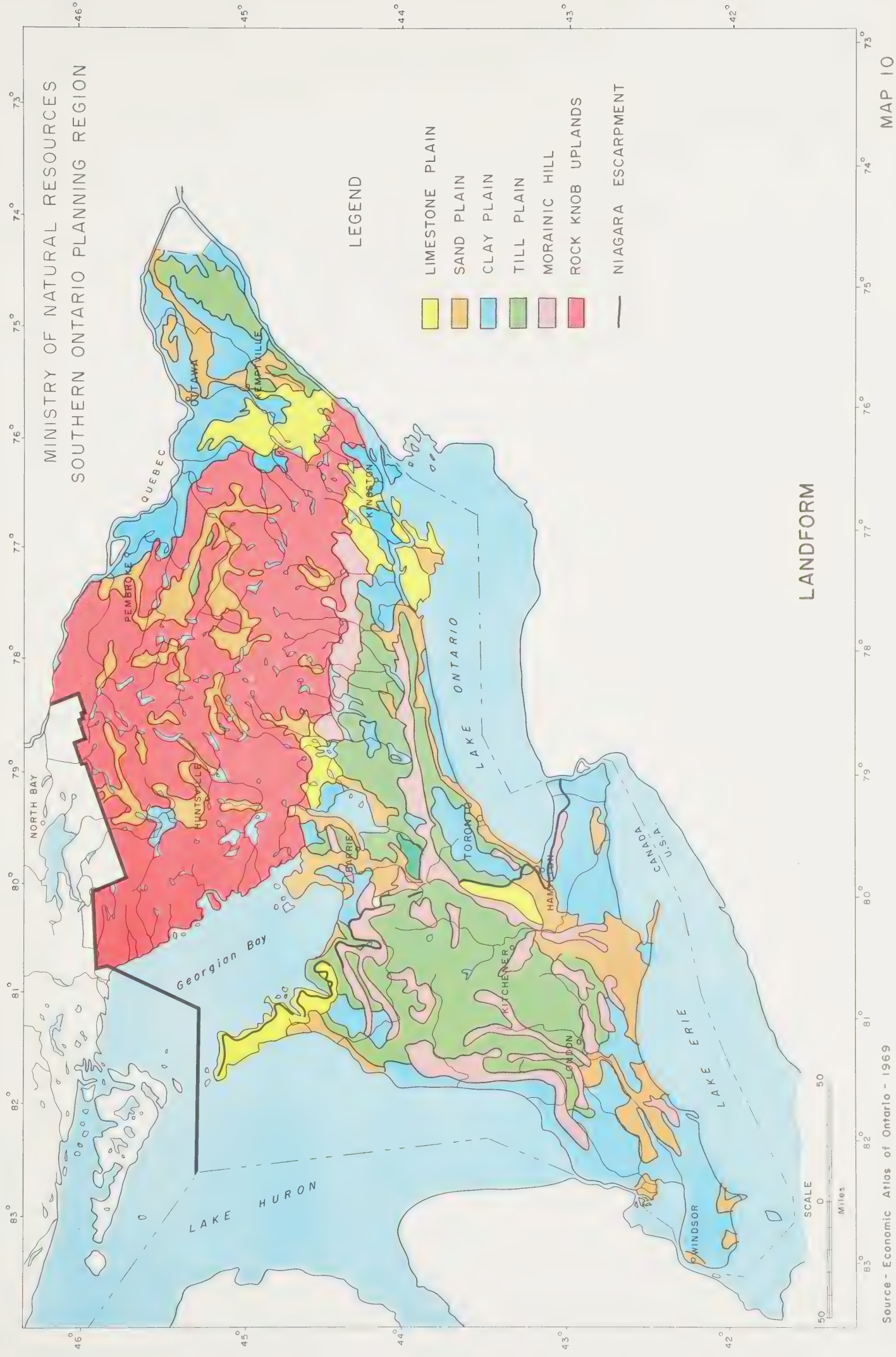
The Precambrian Shield is dominated by bare bedrock and shallow drift deposits. Its generally broken, lowland to upland topography can be described as rock knob uplands. In areas of lower elevation are local deposits of deep, fine textured, lacustrine materials.

In upland valleys may be found deep deposits of sand. These deposits are small in terms of proportion of the area occupied, and are somewhat obscure visually because of their position in the overall topographic pattern, but are important in that they comprise most of the deep soil deposits in the Precambrian Shield.

b) The Niagara Escarpment

The Niagara Escarpment is one of the outstanding physical features of Southern Ontario, extending from Niagara Falls to the northern tip of the Bruce Peninsula, a distance of 250 miles (402 kilometres). It is composed of a cap rock of dolostone overlying shales and sandstone. The highest and most picturesque part is the Blue Mountain near Collingwood where the brow reaches over 1700 feet (518 metres) above Georgian Bay.

Northward along Georgian Bay the escarpment forms a cliff almost at the water's edge, but diminishes to only a few feet above lake level near Tobermory. From Collingwood southward to Caledon the escarpment is partly covered by morainic deposition, but from Caledon to Niagara Falls its cliff-like character reappears. In the Niagara Peninsula it reaches about 350 feet (107 metres) above Lake Ontario. It has a number of indentations along its length which contribute to its aesthetic and recreation values.



c) Limestone Plains

Limestone plains exist on both flanks of the Precambrian Shield in the vicinity of the Thousand Islands. These are extensive areas of limestones with shallow soil covering. In places the plains are separated by low escarpments. The most notable example of this is along the Bay of Quinte. Most of the Bruce Peninsula, and other small parts of the areas west of the Niagara Escarpment are also composed of plains of Paleozoic bedrock.

d) Morainic Hills

This group of landform types, containing stony tills, as well as sand and gravel deposits includes the "horseshore moraines" of southwestern Ontario, and the Oak Ridges Moraine which forms a major watershed boundary north of Lake Ontario. These ridges are of considerable complexity in composition and topography. Some of the morainic areas are characterized by small kettle lakes. There are also many steep-sided valleys of old spillway channels generally associated with morainic hills.

e) Till Plains and Drumlins

Till deposits, largely of medium to fine textured materials form a major part of the landforms outside the Precambrian Shield. Most of the till can be seen in the form of fairly flat to undulating plains. Some till plains, having been flooded in post-glacial times have a shallow intermittent cover of sand, clay or silt. Till areas in some places have been dissected by stream action so that there may be deep valleys with sand or gravel deposits. The most extensive till plain area is in southwestern Ontario but central and eastern Ontario have extensive areas as well.

Drumlins are found in large groups throughout the southern part of Southern Ontario with Peterborough, Woodstock, Guelph and Palmerston being the areas of major concentration.

f) Clay Plains

The chief areas of lacustrine clay plains are between Lake Erie and Lake Huron, primarily in Kent, Essex and Lambton Counties; the Niagara Peninsula; the Georgian Bay-Lake Simcoe area; and, along the north shore of Lake Ontario.



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SOIL TEXTURE AND DEPTH

The clay plains of the Ottawa-St. Lawrence Lowlands are of marine origin.

g) Sand Plains

A Thames River delta formation is the origin of the Kent and Caradoc sand plains. The Norfolk sand plain originated as a delta of the Grand River, and the Camp Borden plain from a delta of the Nottawasaga. In eastern Ontario, the Petawawa and Plantagenet sand plains are deltas of the Ottawa River built in a marine environment. The materials in these plains vary from coarse to very fine sand.

4. Soils

The distribution of soils in Southern Ontario is related to the bedrock and the glacial landform on which they are formed as well as to climatic and vegetative regimes.

In general, the soils south of the Precambrian Shield can be described as being deep fertile clays, loams and sands on varying topography. The Shield area has generally infertile, shallow to deep sandy soils. Organic soils are found throughout Southern Ontario with

the best known examples being near Leamington, Thedford, Rondeau and Bradford.

Twenty-two broad areas have been delineated on the basis of a combination of texture and depth of soil materials and topography. These are shown on Map 11.

5. Water

The water resources fall into two main categories, surface water and ground water.

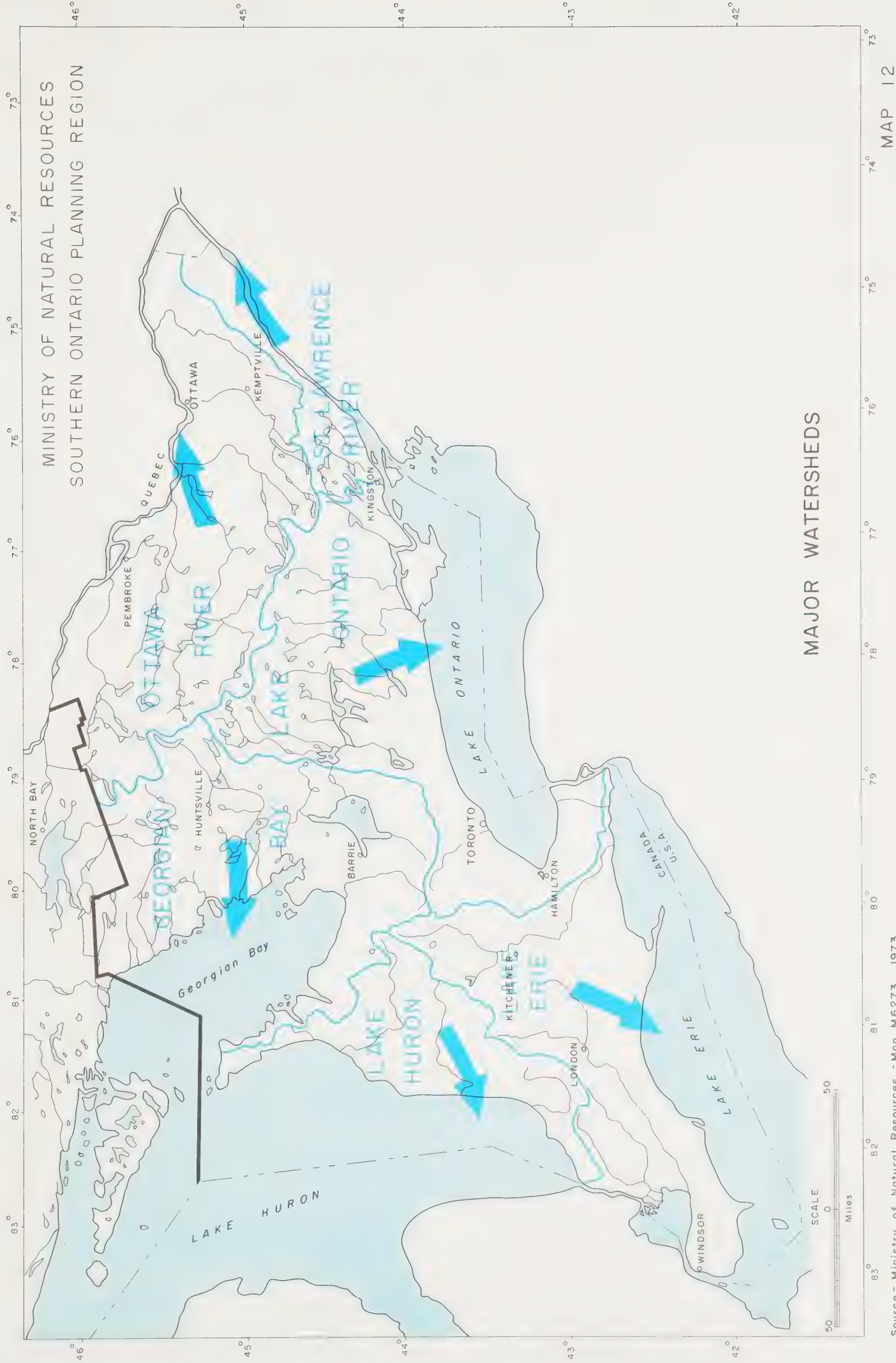
a) Surface Water

One third of Southern Ontario is freshwater. Major watersheds appear on Map 12.

The surface water includes the Great Lakes and the inland waters. It is unevenly distributed, being concentrated in the Great Lakes and in the freshwater bodies of the Precambrian Shield (Map 13).

i) Great Lakes

The Great Lakes occupy 23,125 square miles (59,893 square kilometres) in Southern Ontario, nearly 32 percent of the total area.



The Great Lakes system includes Lake Huron and Georgian Bay, St. Clair River, Lake St. Clair, Detroit River, Lake Erie, Niagara River and Lake Ontario. The total length of the Great Lakes shoreline in Southern Ontario is 1600 miles (2574 kilometres).

Lake Huron is deep and cold. It is physically divided into two parts, the main lake and Georgian Bay. The main body of the lake averages approximately 300 feet (91 metres) deep with its maximum depth 750 feet (229 metres). Georgian Bay averages 100 to 200 feet (30 to 61 metres) with maximum depths of 350 feet (107 metres). It also has a broad band of shallow, and island strewn water along the east shoreline. This area is known as the 30,000 islands.

Lake St. Clair is the smallest lake in the system. The average depth is less than 10 feet (3 metres) and much of the lake is

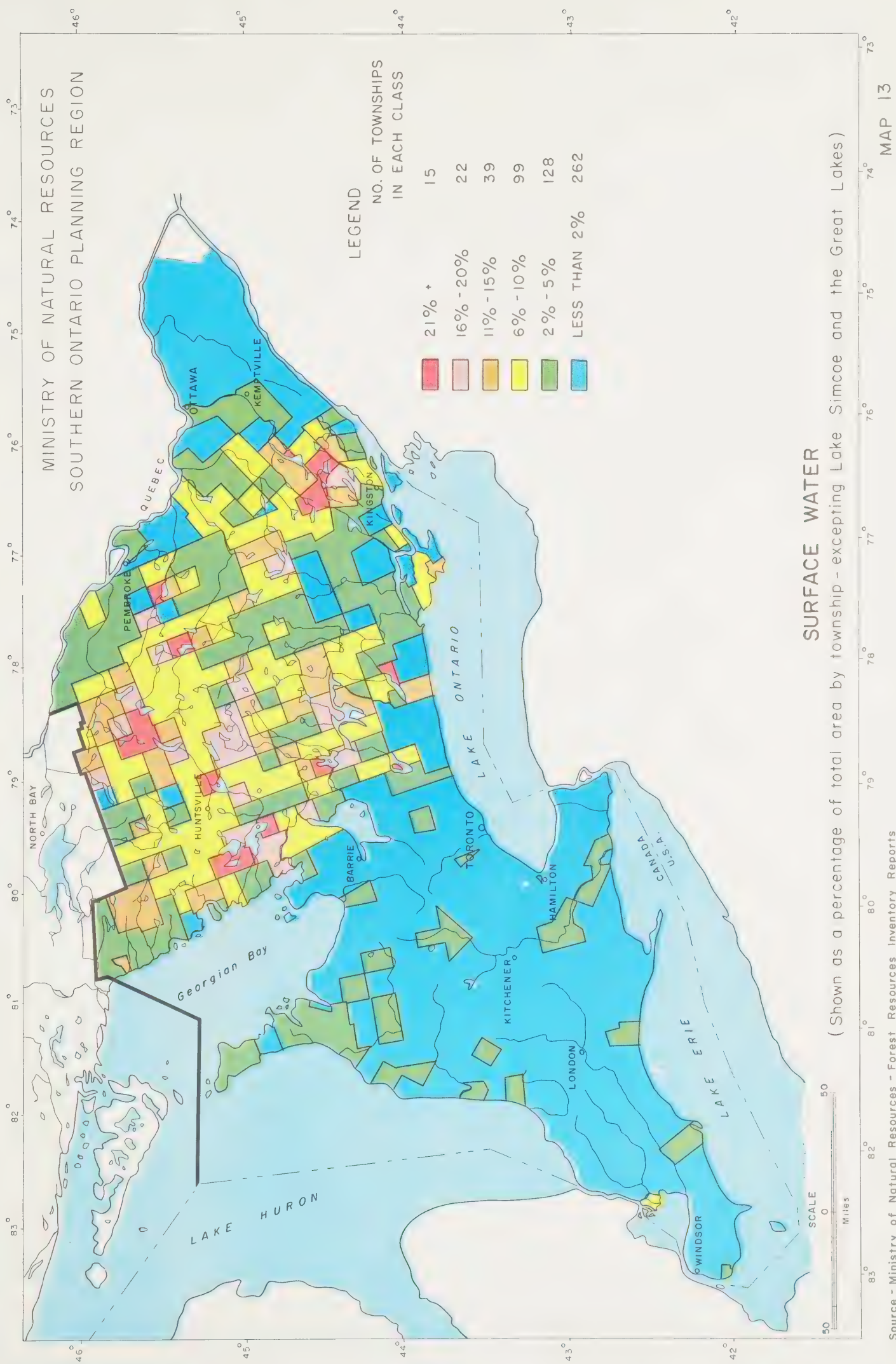
marshy, especially in the north and east. The maximum depth is 27 feet (8 metres) in the dredged ship channel.

Lake Erie is shallow and warm. In bottom configuration it is divided into three distinct parts, the shallow west end, the somewhat deeper central portion, and the deeper area off Long Point where the maximum depth is 210 feet (64 metres). Shoreline erosion is significant, averaging in some places as much as seven feet (2 metres) annually.

Lake Ontario is deep and generally cold. It slopes more or less uniformly into a single trough just south of the international border, where the maximum depth is 774 feet (236 metres).

ii) Inland Waters

Inland lakes in Southern Ontario have a total area of about 2,300 square miles (5,957 square kilometres). They are most numerous on the Precambrian Shield but several



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LEGEND

	NO. OF TOWNSHIPS IN EACH CLASS
21% +	15
16% - 20%	22
11% - 15%	39
6% - 10%	99
2% - 5%	128
LESS THAN 2%	262

SURFACE WATER

(Shown as a percentage of total area by township - excepting Lake Simcoe and the Great Lakes)

significant lakes lie just to the south, namely, Lake Simcoe, the Kawarthas and the Rideaus. These lakes are notable due to their high productivity as compared to those on the Shield.

Map 13 shows the general distribution of inland lakes and also indicates the high concentration of fresh surface water in the Precambrian Shield.

There are thousands of miles of rivers, streams and creeks distributed throughout Southern Ontario. The major rivers are the St. Lawrence, Ottawa, Grand, Thames, the Rideau-Trent Severn system, the Madawaska, Saugeen and Mississippi.

b) Ground Water

Ground water is found in both bedrock strata and unconsolidated surficial materials.

In the Precambrian Shield, the bedrock is largely impermeable and yields very little ground water. The aquifers in the Paleozoic bedrock of Southern Ontario are quite variable.

Wells in these formations have flows that range from less than one gallon (5 litres) per minute to over 800 gallons (3,637 litres) per minute.

Ground water from unconsolidated materials is most readily obtained from layers characteristic of moraine, spillway and deltaic deposits. Areas of these deposits are important as water sources and potential recharge zones.

6. Climate

Southern Ontario has a cool, temperate, subhumid climate reflecting the range of latitude, altitude and topography, proximity to the Great Lakes and geographic position within the continent.

Within Southern Ontario temperatures are generally warmest toward the extreme southwest, and coolest in the uplands of the Precambrian Shield. January mean daily temperatures vary from -3°C at Windsor and in the Niagara fruit belt, to -12°C in the Algonquin area. Mean daily temperatures in July vary from 22°C at Windsor to 19°C and 18°C in the Algonquin and Dundalk uplands respectively.

The length of growing season and frost-free period varies considerably across Southern Ontario. At Windsor the growing season averages 210 days as compared to 180 days in the Algonquin uplands. The corresponding frost-free periods for the same localities are 175 days and 90 days, respectively.

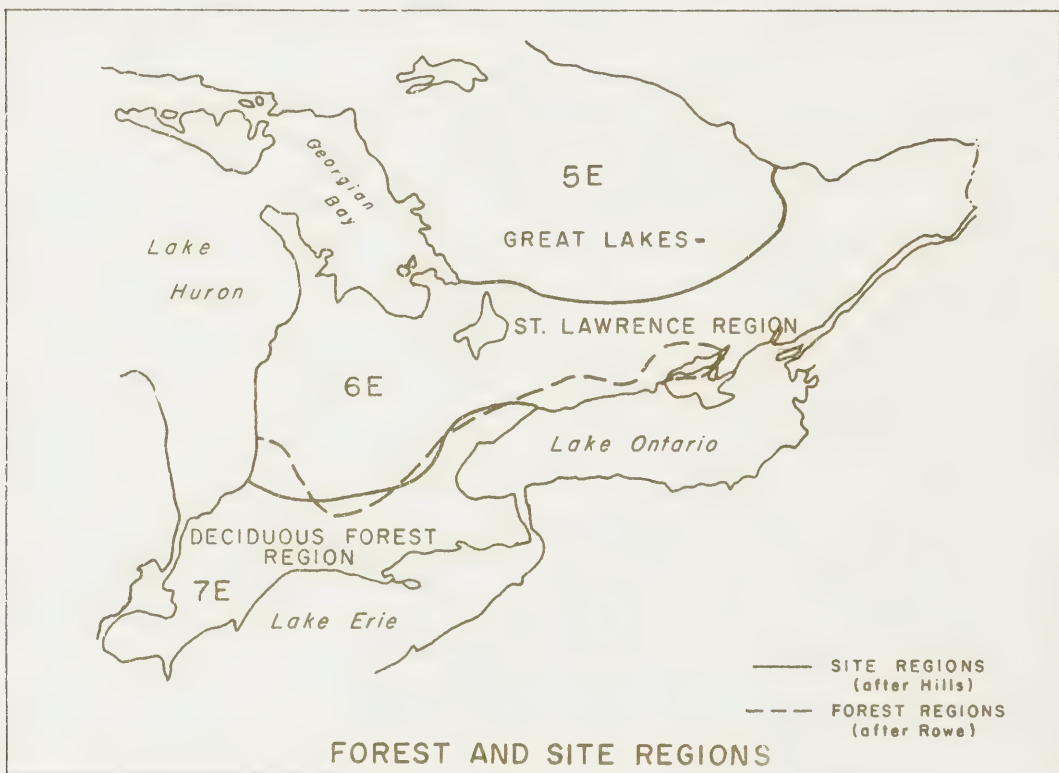
The range of annual precipitation across Southern Ontario is from 20 to over 40 inches (51 to over 102 centimetres). Precipitation tends to be lower in the southwest, in the Niagara Peninsula and in the middle Ottawa Valley. Higher values occur on the highest parts of the area to the west of the Niagara Escarpment and on the west side of the Algonquin uplands. Highest annual snowfalls occur in the Owen Sound-Goderich and the Gravenhurst areas with 90 to 120 inches (229 to 305 centimetres), while the Windsor-Chatham area and the Niagara Peninsula receive the least with 32 to 50 inches (81 to 127 centimetres).

7. Forest Vegetation

Southern Ontario contains a wide range of coniferous and deciduous species which indicate its transitional nature between the deep fertile soils and warm climate to the southwest and the thinner, poorer soils and cooler climate of the Precambrian Shield.

Southern Ontario falls within two forest regions of Canada, the Great Lakes-St. Lawrence and the Deciduous.¹

At the provincial scale there are three site regions in Southern Ontario, each reflecting a change in the dominant vegetation of the ecosystem.² Map 14 shows the relationship between the forest regions and the site regions.



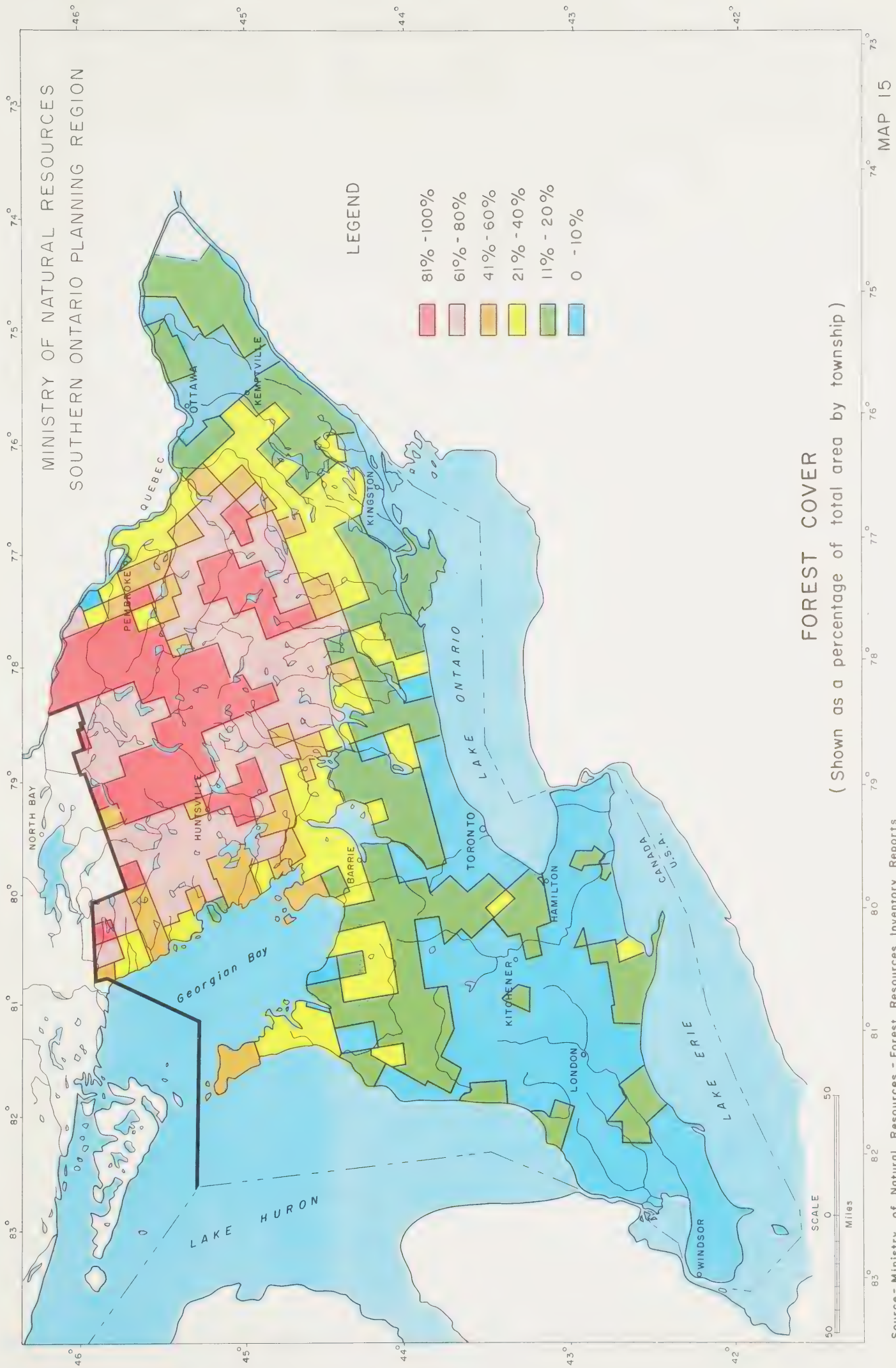
MAP 14

1

J.S. Rowe, Forest Regions of Canada, Environment Canada, 1959

2

G.A. Hills, A Ready Reference to the Description of the Land of Ontario and its Productivity. Preliminary Research Report, Ontario Department of Lands and Forests Maple, 1959.



In Site Region 7E, favourable conditions have allowed the extension of many species of trees, shrubs and herbs normally found further south.

The characteristic association in this area is beech and sugar maple with basswood, red maple, red oak, white oak and bur oak. This area also has the main occurrence in Canada of black walnut as well as most of the wild nut and fruit trees (butternut, hickories, black cherry) that occur in Ontario. It also supports other species uncommon to Ontario such as sycamore, tulip-tree, red mulberry and sassafras, either as scattered individuals or as groups.

The characteristic associations of Site Region 6E are maple, beech, basswood, yellow birch, oak, ash and iron wood. There are scattered small groups or individuals of walnut, butternut and sycamore. In this region the pines and spruces become much more evident but the major component of the forest vegetation is still deciduous.

Site Region 5E is characterized by a mixed conifer-deciduous forest. In this area the number of deciduous species decreases. Maple, yellow birch, basswood and hornbeam form the major association, but they are intermixed with white and red pine. Jack pine is also found throughout this area.

Map 15 shows the forest cover as a percentage of the total land area. In the agricultural part of Southern Ontario the forest cover is generally less than 20 percent of the total land area with some exceptions in Bruce, Dufferin and Simcoe counties. The forest cover is primarily found in small woodlots at the rear of the farms. The central Algonquin uplands are almost totally forested.

8. Fish

The fish resources of Southern Ontario are remarkably diverse; some 173 species of fish are found in the area. The activities of man have considerably altered the original species composition of Southern Ontario waters. The original fish fauna has been augmented by both deliberate and unintentional introductions of a large number of exotic fish species, while several native species have become rare or have disappeared.

a) Great Lakes

The fish community of Lake Huron is presently dominated by alewife, rainbow smelt, suckers, chub, lake whitefish and yellow perch. In addition, there are locally important populations of yellow pickerel, smallmouth bass, pike and

coarse fish such as carp. The development of rainbow trout and splake populations has accompanied recent successes with the sea lamprey control program. A number of exotic salmonids, including brown trout, Atlantic salmon and several species of Pacific salmon have been introduced into the lake by American fisheries agencies.

Lake St. Clair contains large populations of a wide variety of warm water species. Yellow pickerel, largemouth and smallmouth bass, maskinonge and yellow perch are particularly important to the recreational fishery. Abundant populations of several "panfish" species, carp and suckers have been underused since the termination of the commercial fishery.¹

In Lake Erie, yellow perch, rainbow smelt, alewife and freshwater drum are the most numerous species. The depressed stocks of yellow pickerel are showing signs of resurgence. Sizable populations of smallmouth and largemouth bass, pike and various "panfish" species occur in several areas of the lake.

1

"Panfish" include sunfish, crappies, catfish, white bass and rock bass.

In the deep, western basin on Lake Ontario, rainbow smelt and alewife predominate. However, recent sea lamprey control and rehabilitation efforts are allowing the development of important trout and salmon populations. The wider variety of species which occurs in eastern Lake Ontario includes yellow and white perch, smallmouth bass, pike, American eel, carp and "panfish".

b) Inland Waters

The inland lakes of Southern Ontario occur within two principal physiographic regions: the irregular Precambrian Shield to the north and the relatively flat, sedimentary areas of the Ottawa-St. Lawrence and Southern Lowlands. The glacial history of these physical subdivisions has determined to a great extent the relative productivity of their natural waters.

i) Precambrian Shield

A large majority of the lakes in Southern Ontario are located on the Precambrian Shield. These lakes exhibit a great variation in size and depth. The deep, oligotrophic lakes characteristically support lake trout, lake herring and/or lake whitefish populations.

Most of the shallower lakes and larger rivers contain at least some of the following species: yellow pickerel, smallmouth bass, pike, yellow perch and other species of lesser economic significance. Brook and rainbow trout populations exist in some of the smaller lakes and streams on the Precambrian Shield.

- ii) Ottawa-St. Lawrence and Southern Lowlands
Inland waters situated on the sedimentary base of these lowlands are potentially more productive than waters of the exposed Precambrian Shield. Most of the lakes are eutrophic. Species diversity is generally higher than in Shield lakes and fish communities are more complex. A very wide range of warm water fish species inhabit the lakes and streams of southwestern Ontario.

Many of the streams flowing off the Niagara Escarpment, the Oak Ridges Moraine and the Norfolk Sand Plain, support populations of brook and brown trout.

Lake Simcoe still possesses lake trout, lake whitefish and lake herring populations despite severe stresses resulting from overfishing, eutrophication and the emerging dominance of rainbow smelt and yellow perch in the lake.

9. Wildlife

Southern Ontario provides a variety of habitats which supports a great diversity of wildlife species.

The variety of forest types reflects the changes in climate and surficial geology and is a major contributor to this diversity. There is a transition in forest habitats from the small area of southern hardwoods north of Lake Erie (Deciduous Forest Region) north through the northern hardwood forests and the large tracts of mixed conifer-hardwood forests of the Great Lakes-St. Lawrence Forest Region. Pockets of boreal forest type can also be found in Southern Ontario.

The area along the north shore of Lake Erie, including the Niagara Peninsula, particularly contributes to the diversity of wildlife in the area. It is atypical of Ontario as a whole, being the northern limit of a number of species of flora and fauna. The fencerows, edge effect and inter-spersion of cleared and forested land associated with farmlands provide a further variety of wildlife habitats.

The wetlands of the southern agricultural portion are the most productive in the Province. In addition, urban wildlife habitat provides opportunities to view wildlife to large numbers of people.

a) Precambrian Shield

The forest habitat primarily found on the Precambrian Shield is mixed conifer-hardwood. Historically most of the area has been subject to fires and logging and has passed through the early successional stages of regeneration which are productive for such species as white-tailed deer, ruffed grouse and beaver. Changing conditions in the form of forest maturation will mean a decline in the populations of such species.

The white-tailed deer was able to extend its range north because of these various disturbances to the mature forest. Prior to settlement, the southern edge of the Precambrian Shield was the northern boundary of the white-tailed deer range in Ontario. At present deer are found throughout Southern Ontario, their abundance varying with habitat quality.

Moose populations on the shield are increasing.

The southeastern section of the Shield in the vicinity of Kingston supports an interesting diversity of plant and animal communities associated with the mingling of Precambrian and limestone bedrock formations. The Precambrian Shield in the Parry Sound areas supports the most concentrated population of fishers in North America.

b) Agricultural Areas

Most of the hardwood forests of the southern portions of Southern Ontario (off the Precambrian Shield) have been cleared for agriculture. These cleared areas, along with the remaining forests, provide a variety of food and cover for many species of wildlife such as white-tailed deer, puddle ducks, and songbirds including bluebirds, brown thrashers, catbirds and loggerhead shrikes. The abundance of small rodents in agricultural areas attracts many predators including the eastern milk snake, the coyote and birds of prey such as the red-tailed hawk and great horned owl - species, which while typical of the area, are not specific to it. The agricultural areas support the majority of Ontario's raccoons, Hungarian partridge, and red foxes.

The small Deciduous Forest Region north of Lake Erie is unique because of the special variety of flora and fauna that its moderate climate, productive soils and southern deciduous forests support. Some wildlife species significant in this area are the spotted turtle, Fowler's toad, blue-gray gnatcatcher and orchard oriole. Interesting flora include Kentucky coffee tree, flowering dogwood, sassafras and calypso orchid. The marshes of Southern Ontario are highly significant waterfowl staging and breeding areas and support some of the highest muskrat concentrations in the Province.

c) Niagara Escarpment

The Niagara Escarpment is another unique feature of Southern Ontario supporting a further diversity of habitats and harbouring a variety of animals. The interspersed forests and farmlands and low intensity of agricultural operations contribute to this variety. Botanically the limestone associations produce a rich variety of wildflowers and ferns such as dwarf lake iris, *Houstonia*, Alaska orchid and hartstonque, walking and holly ferns, some of which are endemic to the Niagara Escarpment.

Zoologically the Escarpment provides some of the most diverse habitats in Ontario supporting a range of birds from golden-winged warblers to olive-sided flycatchers.

d) Significant Landforms

Although generally not supporting flora and fauna atypical to Southern Ontario, the diversity associated with landforms such as large drumlin fields and the Oak Ridges Moraine is significant. As well as providing scenic vistas, these topographical features produce large numbers of marsh wildlife in the wetlands associated with them.

e) Wetlands

The wetlands south of the Precambrian Shield are biologically the most productive in Ontario because of their high nutrient content and low acidity. These productive wetlands (from open marsh to aspen and cedar swamps) are becoming increasingly important strongholds for wildlife habitat in many areas of Southern Ontario. In areas where pressures on land use are great even the smallest wetlands are significant for wildlife in the area.

In particular, the marshes of Lake Erie (e.g. Long Point, Turkey Point, Rondeau and Point Pelee), of Lake St. Clair, and of Lake Ontario (e.g. Second Marsh and Presqu'ile) are important for producing a variety of species of birds, mammals, reptiles and amphibians and are essential as migration stopover areas for many species of migratory birds, particularly waterfowl of the Atlantic Flyway.

Many of the beaches of the region (e.g. Sandbanks Provincial Park, Presqu'ile and Long Point), and beach associations (e.g. the ecological succession profile at Pinery Provincial Park) are significant to wildlife in Ontario. The unspoiled beach at Long Point, for instance, is the only known nesting site in Ontario for the piping plover.

f) Endangered Species

Endangered species and their habitats are a concern within Southern Ontario. They include the blue racer, a snake which occurs in the extreme south, the timber rattlesnake which has not been recorded since 1942, the peregrine falcon which used to nest near Meaford and which still migrates

through the area, and the bald eagle which both nests in and migrates through Southern Ontario.

Many species that are under investigation occur in the Province only in Southern Ontario. Many pressures, especially intensive urbanization, increase their vulnerability.

IV. Natural Resources Evaluation

The extent to which the needs of growing numbers of people can be met depends largely on resource potential and on the manner of resources development. This chapter examines resource potential, including a brief discussion of the historical resources of Southern Ontario. Chapter V deals with the present development and use of the natural resources.

Over the past ten years, the land and to some extent the water of Southern Ontario have been the subject of studies by the Ontario Land Inventory, the Canada Land Inventory and others. Land and water areas have been evaluated as to capability for a range of uses, that is, the natural ability of an area to provide continuous benefits under an assumed level of management.

Insofar as possible, the capability evaluations are discussed within the framework of the major physiographic subdivisions of Southern Ontario.

1. Mineral Resources

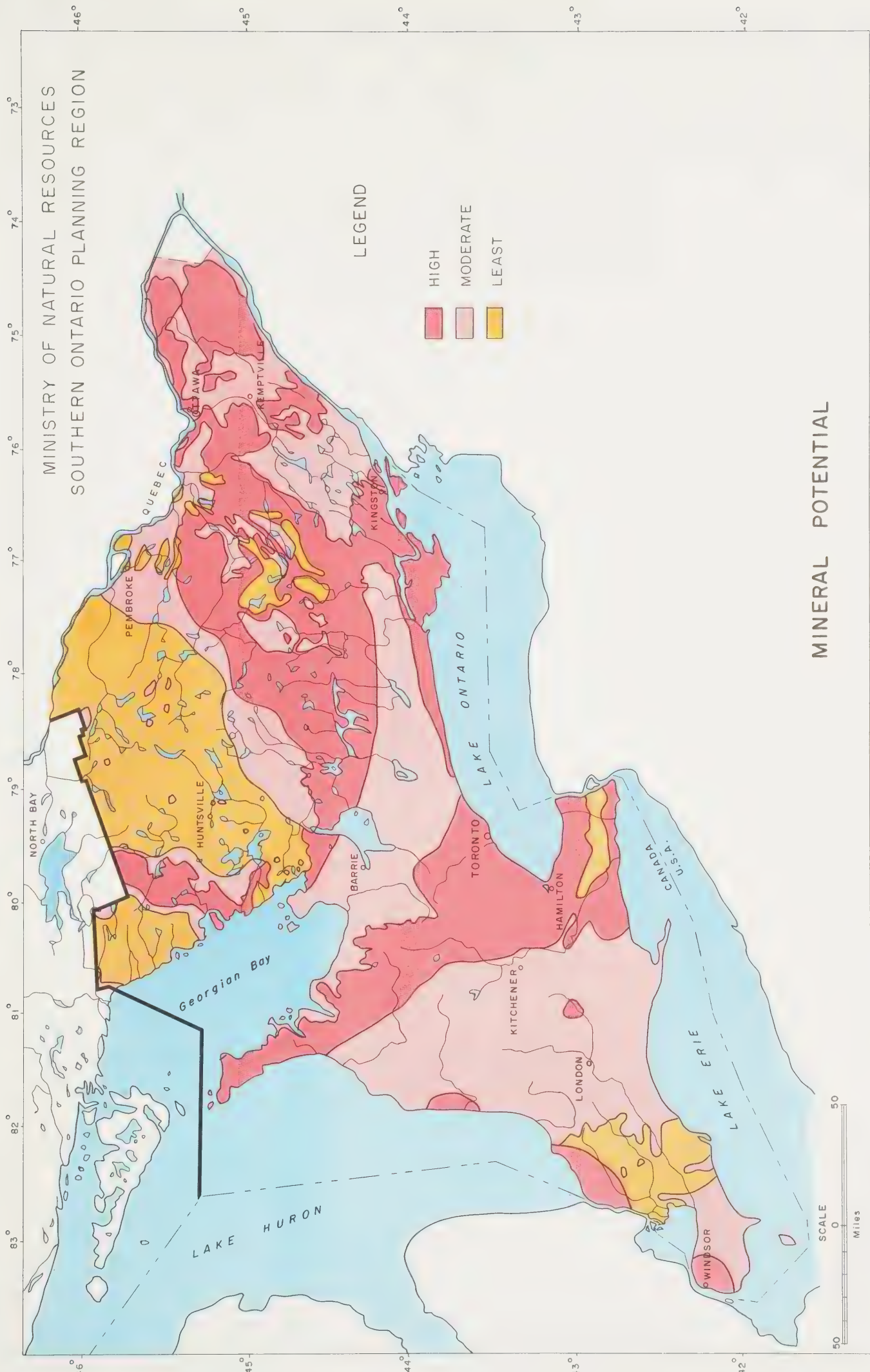
The significant bedrock mineral potential and sand and gravel resources of Southern Ontario are shown on Maps 16 and 17 respectively. Map 8 (page 39), showing bedrock

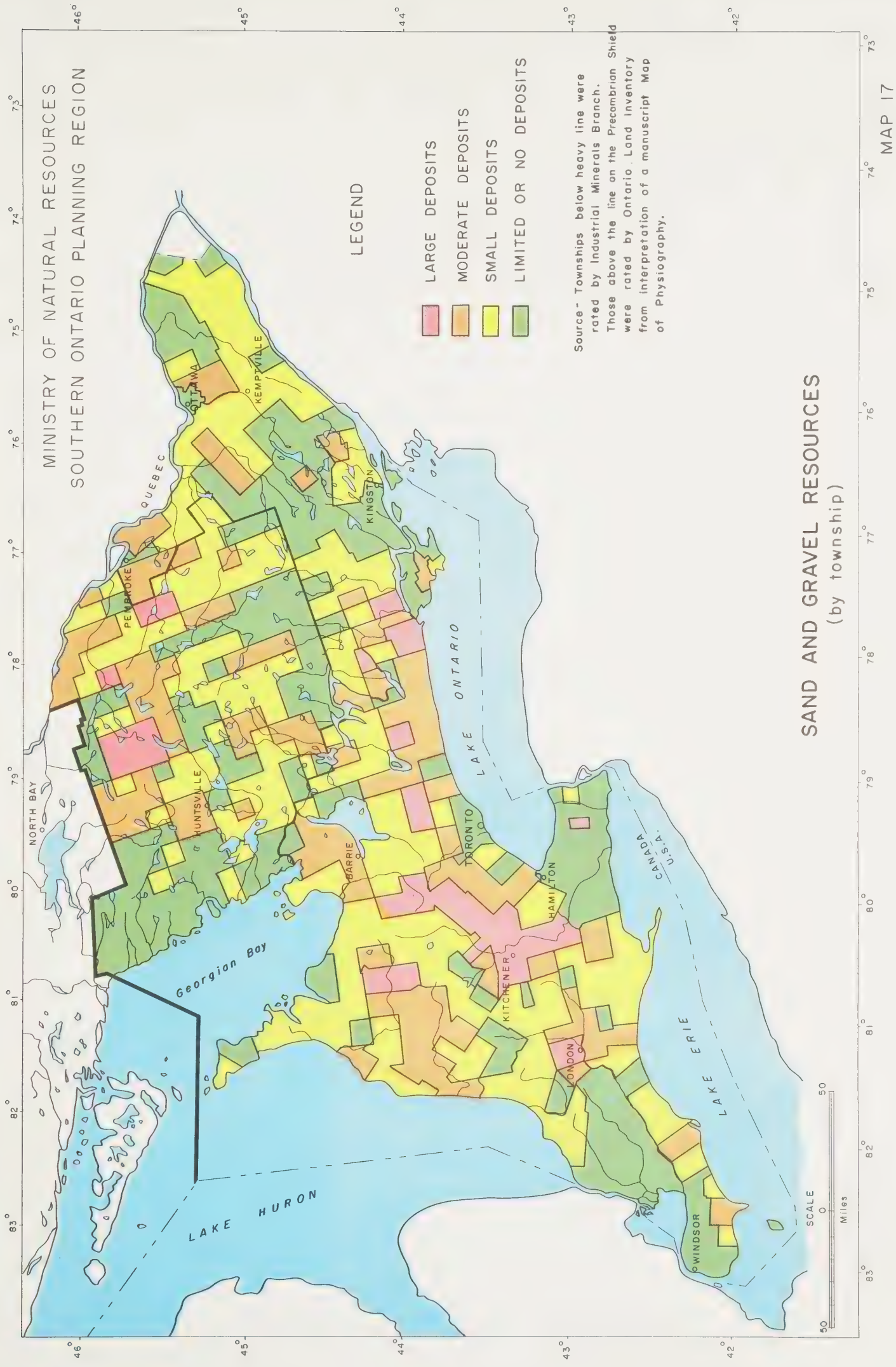
geology is also a useful reference.

a) Precambrian Shield

The Precambrian Shield may be divided into three parts with differing mineral resource potential. The large southerly triangle of mixed Precambrian limestone and volcanics (Map 8, Page 32) has generally high mineral exploration potential as it has known deposits of uranium, thorium, iron, zinc, copper, lead and possibly gold and molybdenum. The area also has sources of marble, calcium, magnesium, nepheline syenite, anorthosite, talc, graphite, fluorite, mica, apatite, feldspar and quartz. Nepheline syenite and anorthosite are suitable alternatives to imported bauxite ore and may become important future raw materials for the production of aluminum.

The potential for uranium is reflected in two principal areas of occurrence. A major zone extends northeast from the edge of the Shield through Bancroft to the Ottawa River. A lesser zone, lies some distance to the southeast and passes through Kaladar.





The relatively small and elongated area of the Shield which extends northeasterly from Parry Sound has some known occurrences of copper, uranium and anorthosite.

Elsewhere through the Precambrian Shield bedrock mineral resource potential is considerably lower.

b) Ottawa-St. Lawrence Lowlands

The Paleozoic sediments of the Ottawa-St. Lawrence Lowlands have moderate to high potential. East and south of Ottawa are areas of limestone with lesser amounts of shale, in general covered with several feet of drift. South and west of Ottawa are extensive areas of exposed dolomite and sandstone. The mineral resource ratings reflect the relatively shallow drift which affords good accessibility to the bedrock. In the Ottawa-St. Lawrence Lowlands construction aggregates are obtained to some degree from surficial deposits, but largely from the bedrock resource.

c) Southern Lowlands

The Southern Lowlands are also underlain by sedimentary Paleozoic bedrock covered by drift which is shallow in places but ranges up to several

hundred feet in depth.

The portion of the Southern Lowlands lying immediately southwest of the Precambrian Shield and along the north shore of Lake Ontario is a broad belt in which Paleozoic limestones are near the surface or are exposed. This high mineral potential area provides the greater part of raw materials for cement production in Ontario as well as large amounts of construction aggregate.

Westward toward the Niagara Escarpment is a wide belt of shale highly rated as the source of supply and from which much of Ontario's brick and tile are produced.

The Niagara Escarpment face contains readily accessible deposits of sandstone which along with the cap rock of dolostone give the escarpment a high mineral potential in an area of very considerable demand.

Younger rocks forming the bedrock in most of the Grand River valley carry deposits of gypsum at Caledonia and Hagersville. Special limestones of high purity, suitable for uses in the chemical

industry and as fluxes in steel making, occur in the Woodstock and Ingersoll Areas. These limestones are a unique industrial resource and impart very high value to the area.

Farther west the bedrock consists primarily of limestone, dolomite and shale generally overlain by deep drift. Minor potential occurs near Thedford with surficial clays for drain tile and shale for brick production. High mineral resource potential is limited to areas underlain at considerable depth by salt deposits near Windsor, Sarnia and Goderich, and to areas where limestone can be quarried for use in the chemical industry or as construction aggregate, e.g., south of Windsor in the Amherstburg area.

The potential for gas and oil production is modest. Gas and oil fields are scattered in several areas across southwestern Ontario. There is exploration for gas taking place in Lake Erie (Map 29, Page 122) as well as inland.

d) Sand and Gravel Resources

Very substantial quantities of sand and gravel are found in Southern Ontario, mainly in kame

moraine and spillway formations, and to a lesser extent in eskers, beach deposits and sand plains (Map 17).

The dominantly bare bedrock and shallow drift conditions on the Precambrian Shield are reflected in the limited sand and gravel resources. Gravel resources are not extensive; the larger deposits shown on Map 17 are deep sandy materials.

In the Ottawa-St. Lawrence Lowlands, surficial deposits are locally significant for sand and gravel, especially in the vicinity of Ottawa.

The extent and variety of deep surficial deposits in the Southern Lowlands contain very large amounts of sand and gravel in an area where demand is high. The main areas of high potential include the Oak Ridges Moraine, the Caledon hills, the spillways of Waterloo and Wellington counties.

There are thirty-four townships in which known sand and gravel deposits are very large (Map 17).

2. Forests

The combination of favourable climate and soils gives Southern Ontario a high potential for forest production and a diversity of tree species. This diversity includes several species of hardwood with high economical importance. The distribution of broad timber use capability classes is shown on Map 18.

The theoretical forest production of all land in Southern Ontario is about 1.8 billion cubic feet (50 million cubic metres) per year. The potential productivity of the land base presently assumed available for forest production is about 450 million cubic feet (13 million cubic metres) per year.¹

a) Southern Lowlands

Generally speaking, the Southern Lowlands have a dominance of high capability land for timber production. The potential for rapid forest growth rates and diversity of forest reflect the more favourable climate and soils. Exceptions to this general pattern occur mainly in areas of shallow or wet soils, e.g. along the Niagara Escarpment where capability is moderate to low.

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It is assumed that a net area of about 9 million acres (4 million hectares) is available for forest production (see chapter V for more details). This includes land in use for agriculture, municipalities, parks & park reserves as well as protection forest and land too poor to grow merchantable forests. It is also assumed, based on soil fertility and climate that an average production of 50 cubic feet (cubic metres) per acre per year could be achieved through intensive management of the 9 million available acres (4 million hectares).

b) Ottawa-St. Lawrence Lowlands

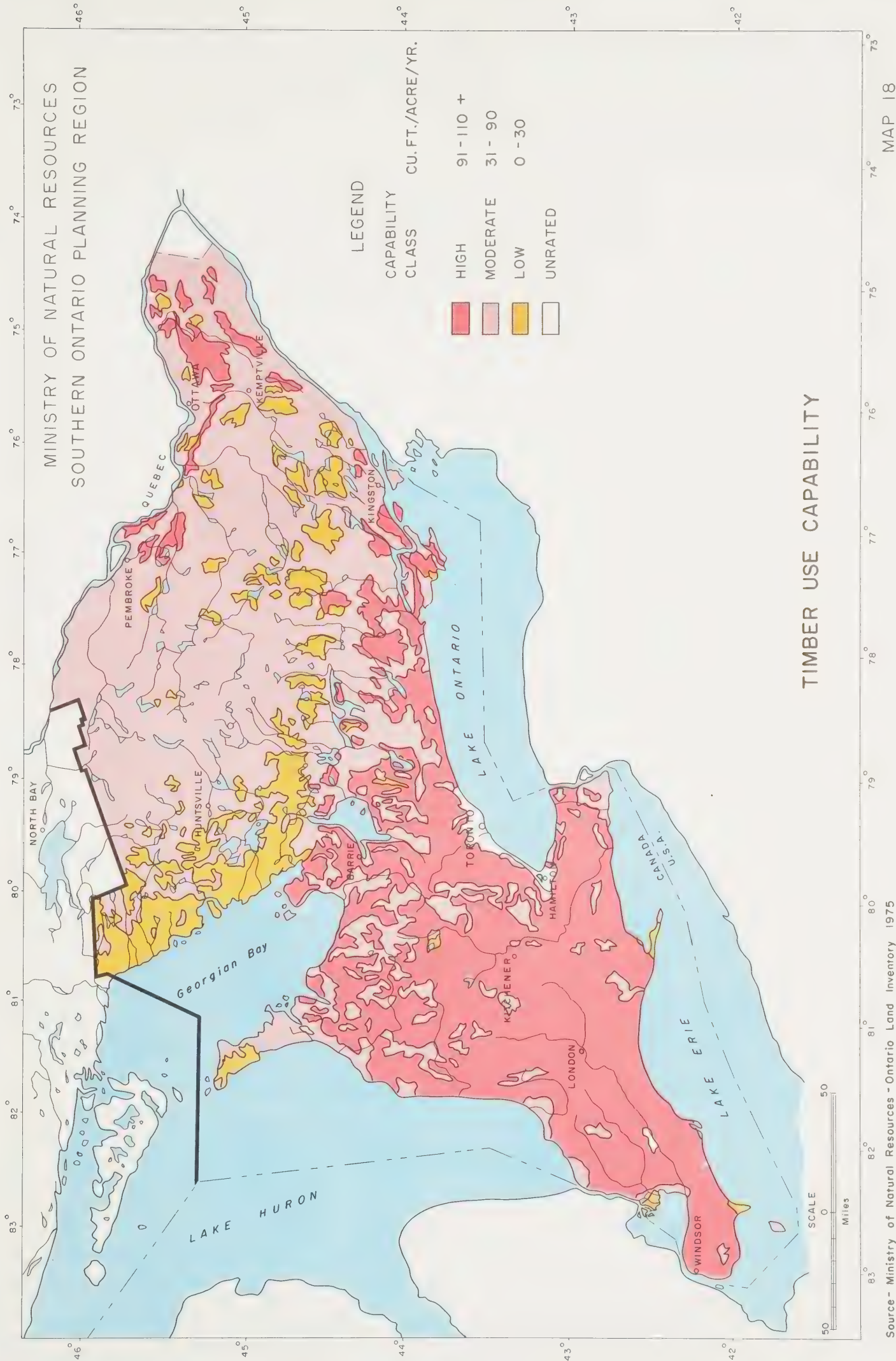
This area is much less favoured in these respects and the timber use capability is predominantly moderate with some high areas.

c) Precambrian Shield

In the Precambrian Shield where soils are generally shallow timber use capability is moderate. Areas of very shallow soils, especially along Georgian Bay, have low capability. Capability in the Shield also reflects the somewhat less favourable climate than prevails elsewhere in Southern Ontario.

d) Distribution

Generally sites with high timber use capability have a low level of forest cover, because they also have high agricultural use capability and to a large extent are farmed. Forest in such areas is therefore largely confined to farm woodlots, river valleys, swamps and local areas of shallow or infertile soil. The largest major forest concentration is in the Precambrian Shield where forest cover is sixty percent or more (Map 15 page 62); with high proportion of the better sites located in and around Algonquin Park.



3. Fisheries

Complete productivity estimates are not available for all waters in Southern Ontario. Approximations for the Great Lakes and inland lakes have been made. Rivers and streams are yet to be evaluated.

a) Great Lakes

In general, the greatest fisheries potential in Southern Ontario is in the Great Lakes. Table 12 compares the current commercial harvest of 41 million pounds (18,614,000 kilograms) per year with the estimated sustained yield for both commercial and sport fishing of about 58 million pounds (kilograms). These estimates are for all fish species. Full development of the potential fishery of the Great Lakes offers the opportunity for a significant increase in commercial fishing.

Although a high potential exists, there has been a collapse of major stocks of valuable species associated with the invasion of the sea lamprey, introduction of new fish species, over-fishing, eutrophication and habitat destruction. In Lake Erie, for example, the lake herring, lake whitefish and blue pike have virtually disappeared,

Table 12

Size, Current Production and Estimated Productivity of Lakes
Southern Ontario Planning Region

Lakes	Size of Waterbody Millions of acres (Millions of hectares) ¹		Current Harvest Millions of pounds (Millions of kilograms) ²		Potential Rate of Sustainable Yield	Potential Sustainable Yield Millions lbs/year (Millions kgm/year)	
	Entire Lake	Canadian Portion	Entire Lake ⁷	Canadian Portion ⁴		Entire Lake	Canadian Portion (based on area)
Erie	6.3 (2.6)	3.1 (1.2)	51.7 (23.5)	36.7 (16.7)	7.99 (8.9)	50.3 (22.8)	24.8 (11.2)
Huron	14.6 (5.9)	7.4 (2.9) ⁵	8.1 (3.7)	2.3 (1.0) ⁵	1.46 (1.6)	21.3 (9.7)	10.8 (4.9)
Ontario and St. Lawrence	4.8 (1.9)	2.6 (1.0)	2.3 (1.0)	2.4 (1.1)	1.15 (1.3)	5.5 (2.5)	3.0 (1.4)
Connecting Waters	0.5 (.2)	0.2 (0.8) ³	—	—	4.88 (5.5)	2.4 (1.1)	1.0 (.5)
Sub Total	25.7 (10.4)	13.3 (5.4)	62.1 (28.2)	41.4 (18.8)	—	79.5 (36.1)	39.6 (18.0)
Inland Lakes		1.5 (.6)		0.5 (.2) ⁶	2.13 to 15.0 (2.4 to 16.8)	6.2 (2.8)	6.2 (2.8)
Total		14.8 (6.0)		41.9 (19.0)			58.6 (26.7)

Source: Ministry of Natural Resources, Fisheries Branch 1977.

1. — measurement of Ontario portion of Great Lakes is by the O.C.R.S. modified by Fisheries Branch to take into account small islands
— measurement of total lake is from Fisheries Branch
2. — current harvest for the Great Lakes is based on reported commercial catch the 10 year average, 1966-75, excluding Lake St. Clair as reported by Fisheries Branch in Ontario Commercial Fish Industry Statistics and Supplement to Technical Report # 3, Commercial Fish Production in the Great Lakes, 1961 to 1968, Great Lakes Fisheries Commission, 1970
3. — connecting waters include Lake St. Clair, and the Niagara River
4. — estimate of Ministry staff and including a safety factor (allocation to stocks??)
5. — figures for inland water are from Commercial Fish Industry Statistics, 1966-75.
6. — exact current harvest figures not available, 50% to Canada used to complete table.
7. — the entire potential is assigned to Canada due to data from different time periods used in Column B.

to be replaced by less desirable species such as yellow perch and rainbow smelt.

The apparent success of the sea lamprey control program in Lakes Superior and Huron indicate that sizable salmonid populations may be re-established in Lakes Huron and Ontario. In 1972 Canada-United States Agreement on Water Quality in the Great Lakes allows cautious optimism that cultural eutrophication and the addition of aquatic contaminants can be limited.

Hatchery expansion and modernization can play an important role in the restoration of fish populations. The highly selected hybrid splake is a pioneer attempt to tailor a fish to fit a changed environment. Stream spawning migratory trout and salmon¹ offer another means of increasing self-sustaining stocks of valuable fish species in Lakes Huron and Ontario.

In addition, enhancement of habitat for anadromous fish species is considered to be an essential

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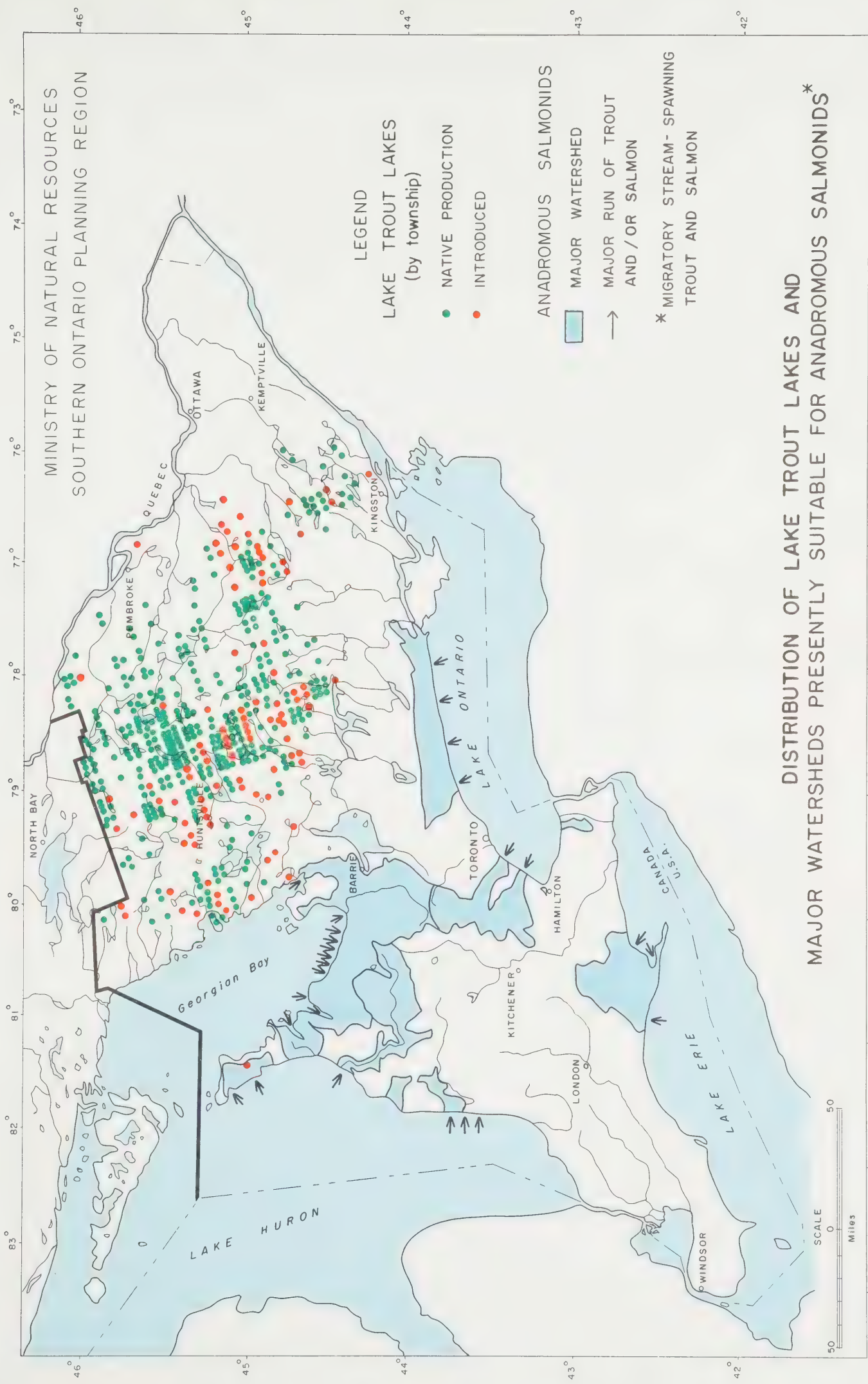
Specifically, these anadromous salmonids spend most of their adult lives in a lake environment, but return to tributary streams to spawn.

component of Great Lakes rehabilitation. The Thames River and Sydenham River provide important spawning and rearing areas for the yellow pickerel of Lake St. Clair and western Lake Erie. The streams of the Norfolk Sand Plain support resident and anadromous populations of brook, rainbow and brown trout. Almost without exception, those tributaries which are most critical to the rehabilitation of Lakes Ontario and Huron arise primarily along the Oak Ridges Moraine and the Niagara Escarpment (Map 19). These streams are characterized by relatively unimpaired water quality. Unobstructed passage of migrating fish to suitable spawning sites must be ensured.

b) Inland Lakes

Table 12 shows an estimated sustainable yield from inland lakes of 6.2 million pounds (2.8 million kilograms) per year.

It is noteworthy that the natural productivity of lakes varies widely across Southern Ontario. Virtually all lakes located on the Precambrian Shield cannot provide a sustained yield of



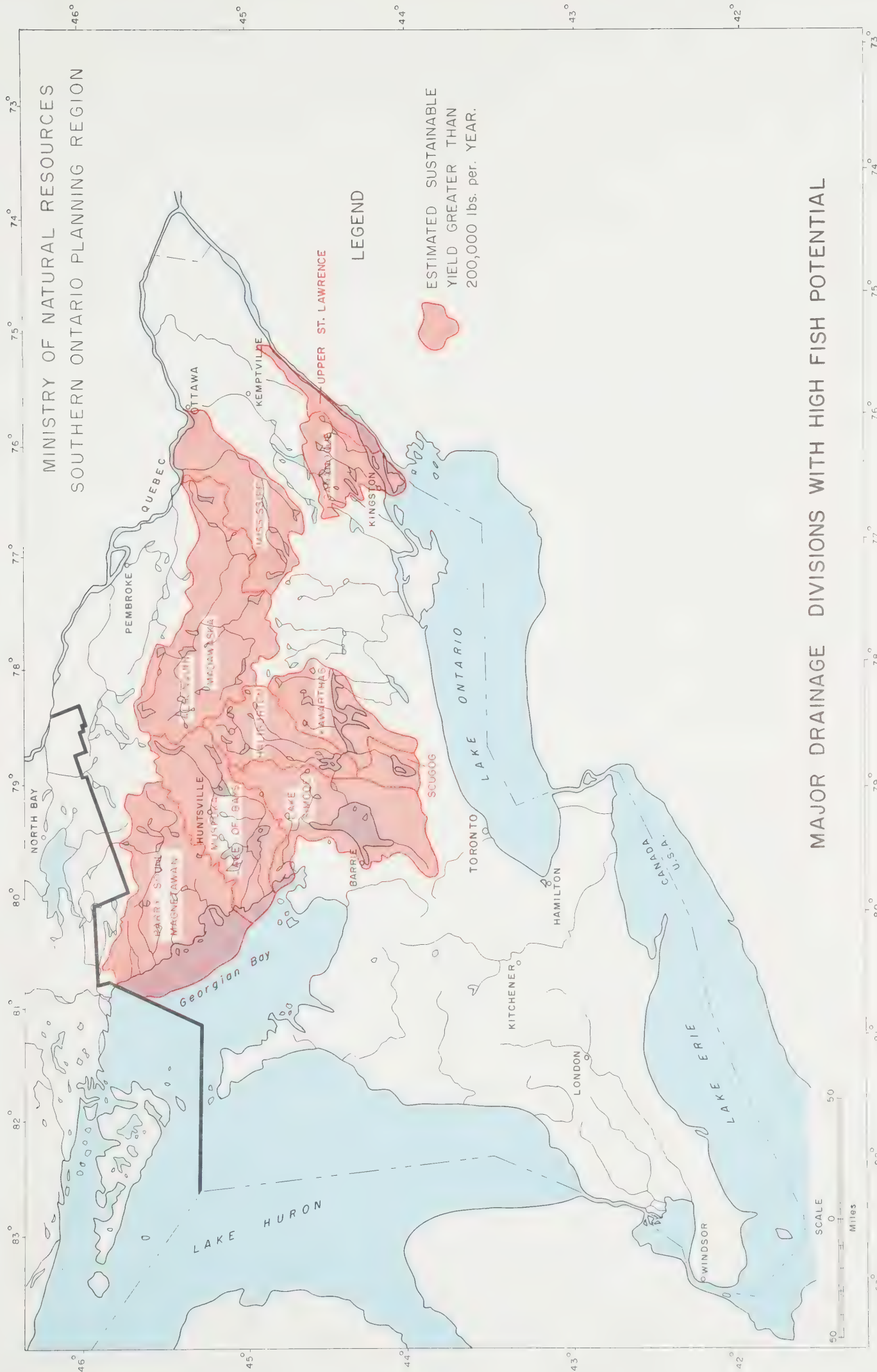
greater than 5 pounds per surface acre (5.6 kilograms per hectare) per year, while most lakes on sedimentary rock are capable of yields of 5 to 20 pounds per surface acre (5.6 to 22 kilograms per hectare) on a sustained yield basis. In Southern Ontario, the highest estimated sustainable yield is from Lake Simcoe, Haliburton, Kawarthas, Scugog, Mississippi Gananoque and upper St. Lawrence River major drainage divisions (Map 20).

Existing inland fisheries are in many cases nearing their maximum level of production consistent with the maintenance of diverse and stable fish communities. Careful management will be necessary in the future if the present yield of desirable and valuable fish species is to be maintained.

Many of the stresses which have been identified as acting on fish stocks in the Great Lakes also operate in the inland waters. In particular, deforestation, stream channelization and drainage projects, impoundment of natural waters,

poor agricultural practices, and a variety of other factors have resulted in the degradation of water quality and the subsequent loss of fish stocks. Serious depreciation of fish populations have been noted in a number of waters including the Muskoka Lakes, Haliburton Lakes, Lake Simcoe and many of the smaller lake trout waters.

Lake trout lakes are a category of inland waters deserving of special attention. Of the 2,000 lakes supporting lake trout in Ontario, 504 are located south of the French River (Map 19, page 90). With very few exceptions, lake trout are limited to deep, oligotrophic waters of the Precambrian Shield. The species is slow growing, takes longer to mature and is very vulnerable to fishing pressure. A lake trout harvest of 0.5 pounds per acre per year (.227 kilograms per hectare per year) is commonly considered to be the maximum sustainable yield for most waters. Many lake trout populations are presently showing signs of stress. In some cases viable lake trout populations have disappeared due to water quality deterioration and fishing pressure.



4. Wildlife

Habitat is the key to wildlife populations. The capability to produce habitat is related to soils and climate, since these affect the type, abundance and diversity of species present. Actual or existing habitat conditions are also dependent upon present land use.

a) Habitat Capability and Suitability

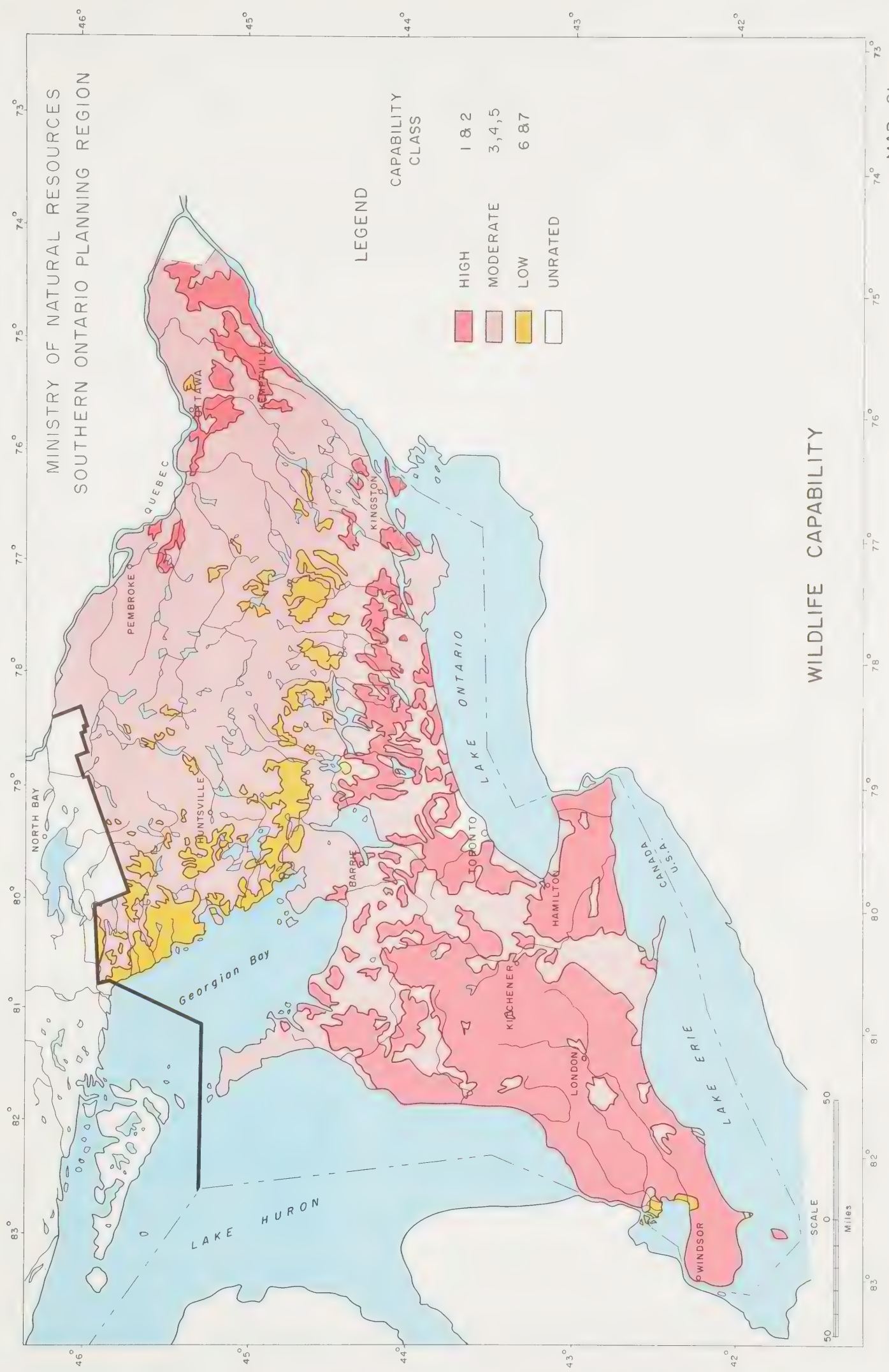
The capability to produce habitat for wildlife varies considerably in Southern Ontario. Generally, capability is greatest where soils are most fertile and the growing season is the longest. Potential is reduced with decreasing fertility and soil depth, poor moisture conditions and shorter growing seasons. Consequently, in Southern Ontario the lowest wildlife capability is found on the Precambrian Shield, particularly in the vicinity of Georgian Bay. This is illustrated on Map 21 for wildlife generally, and on Map 22 for waterfowl. On the latter map, wetlands including the Lake St. Clair, Long Point and Rondeau marshes stand out due to their size and high capability.

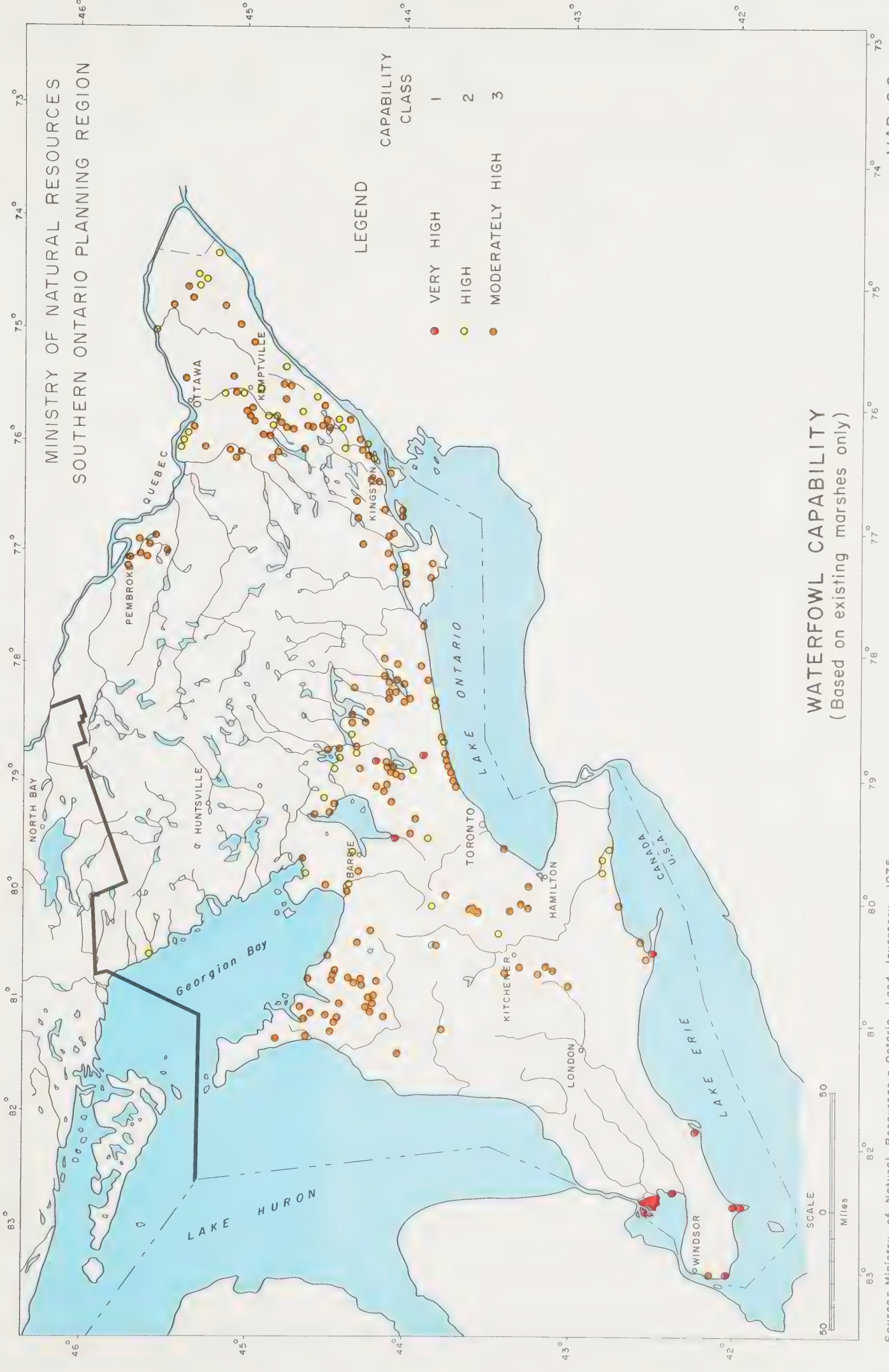
Maximum production is rarely realized since few areas are managed with a consideration for wildlife.

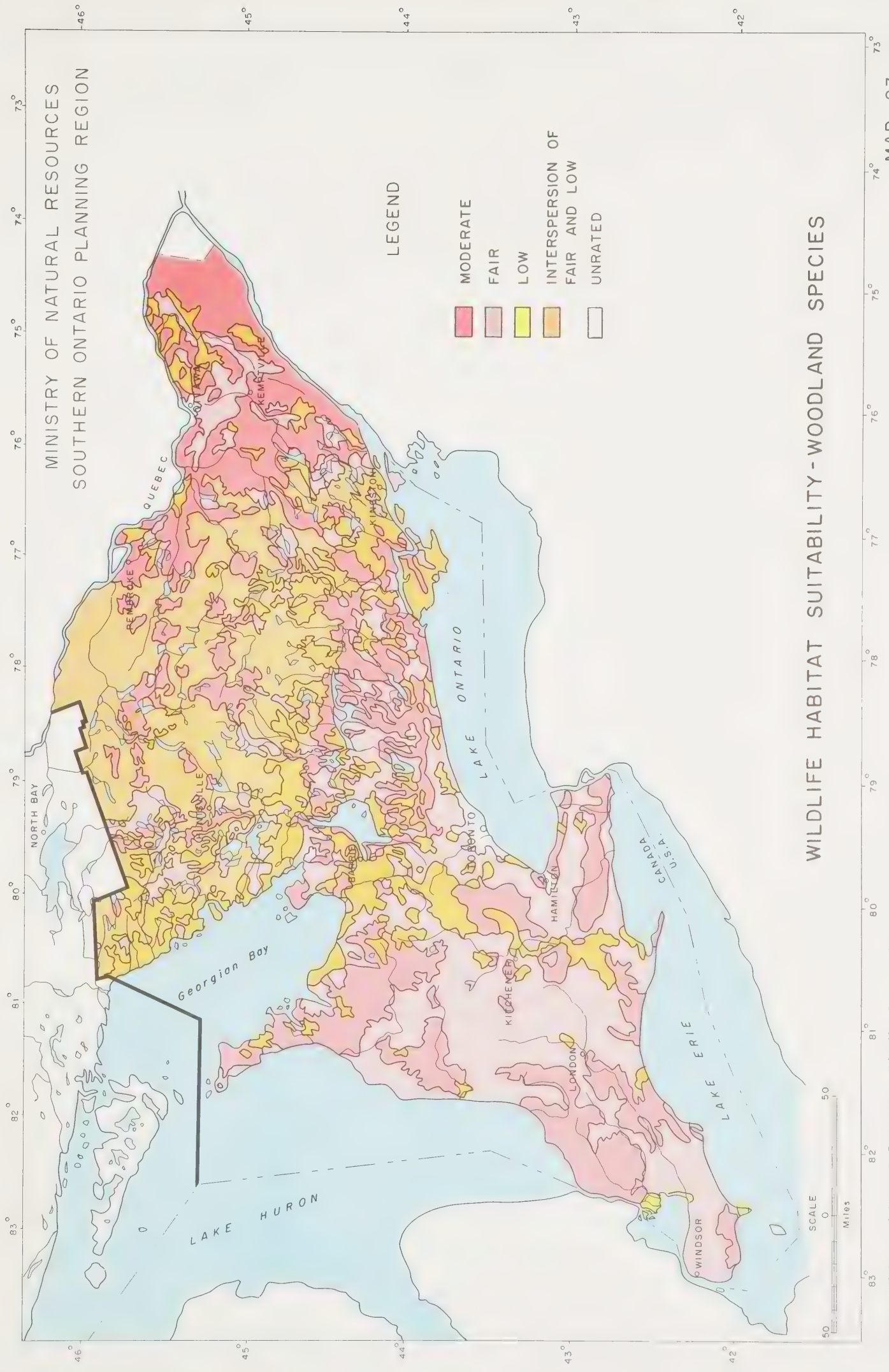
In agricultural Ontario (south of the Precambrian Shield) suitability of existing habitat is closely related to soil type since this influences the intensity of agriculture. On sandy soils (e.g. Oak Ridges Moraine, Wingham area, Norfolk Sand Plains), and on shallow soils (e.g. ravines, river systems) habitat is of moderately high quality for wildlife requiring wooded cover or an interspersed of wooded and cleared areas (Map 23). On the more fertile soils there is little suitable habitat for forest wildlife because of the lack of food and cover, but for agriculturally oriented wildlife, habitat suitability is moderate to high depending upon the intensity of agriculture (Map 24).

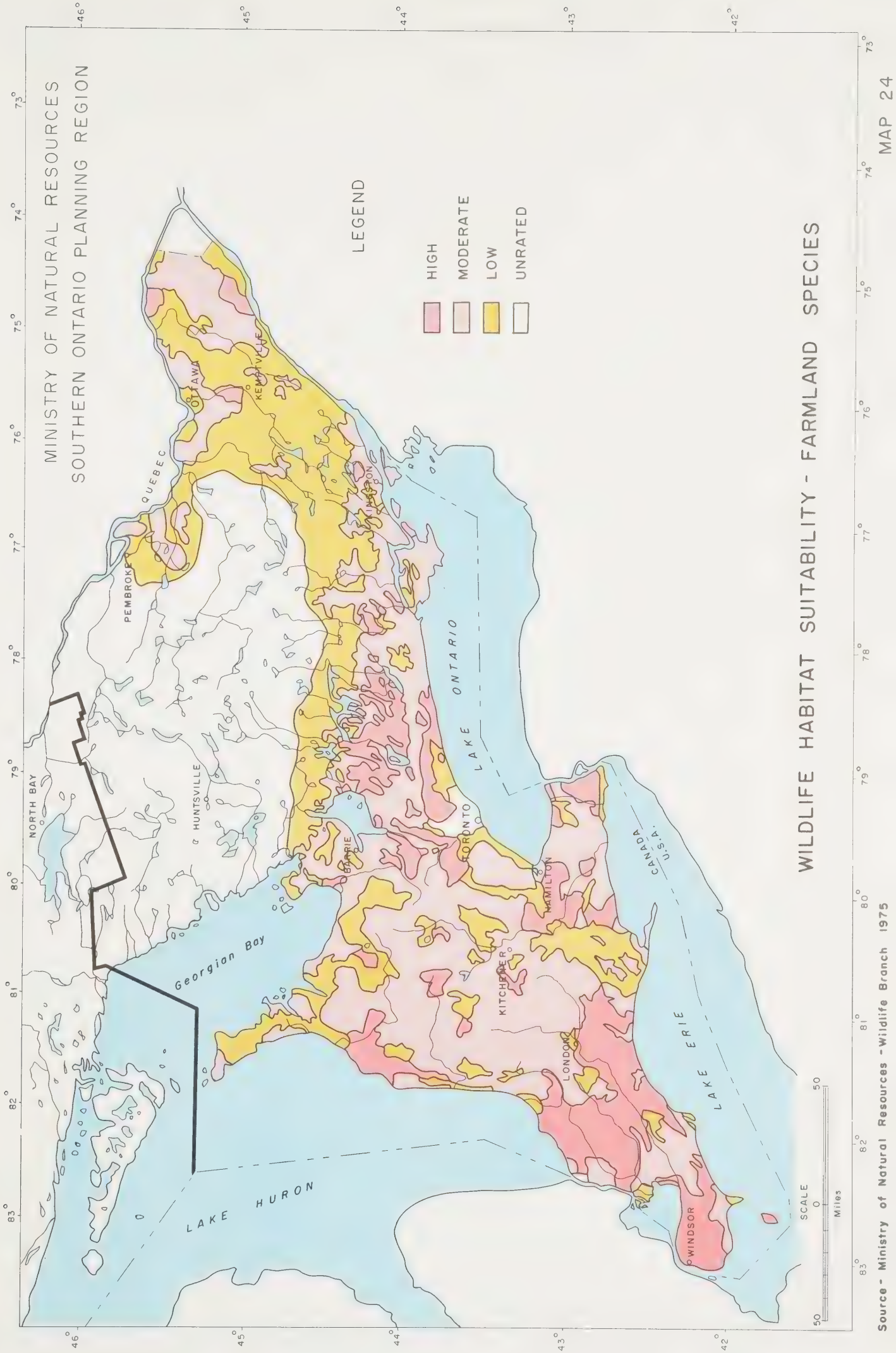
b) Habitat Changes and Encroachments

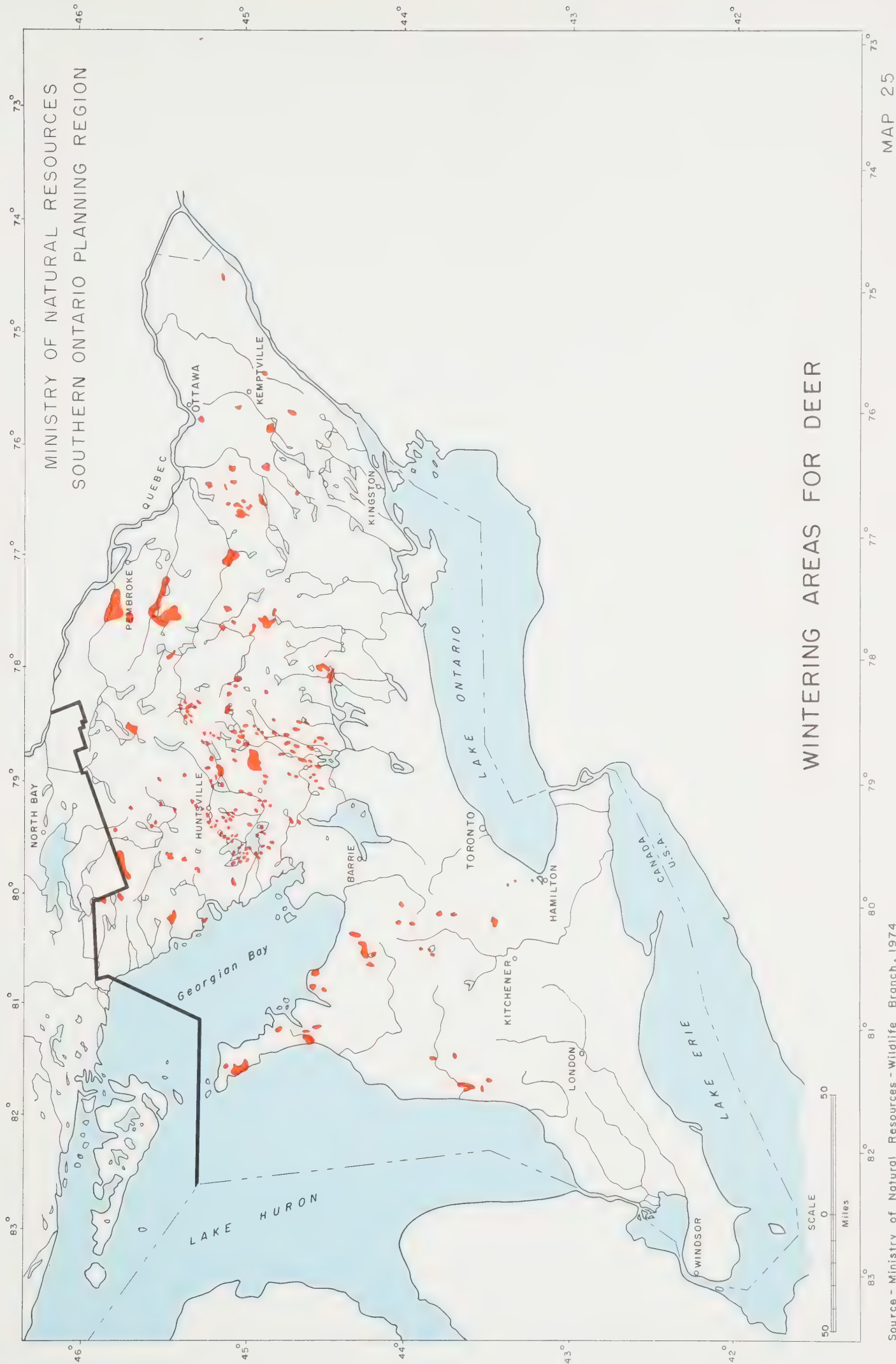
Systems are dynamic. This is exemplified by present changes in habitat occurring on the Precambrian Shield. Fire and logging in the late 1800's and early 1900's produced an early successional stage forest, which provided prime











habitat for deer and grouse. Deer populations expanded, but gradually the quality of range began to deteriorate, as formerly good range matured and was not replaced by new range. Following severe winters in the late 1950's populations of deer decreased substantially. Range continued to deteriorate as the forest matured. Unless increased management efforts are initiated to change this process deer populations will decline further in the future. These habitat changes, however, have resulted in increased moose populations.

Areas of conifers which provide adequate shelter are very important for deer in winter on the Precambrian Shield and northern part of the ¹ Niagara Escarpment (Map 25). There is a shortage of these areas in some parts of Southern Ontario. The protection and management of these areas is essential for the maintenance or increase of deer populations.

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Some concentration areas are used only in severe winters and are not shown on Map 25.

South of the Precambrian Shield, early agriculture greatly increased the diversity of conditions found prior to settlement. This diversity was maintained until recently in many areas. The forests had been replaced by a productive field-forest ecosystem, which supported both an abundance and variety of wildlife species and an increasing but largely rural human population. Fields were small, a diversity of crops were grown and field-forest edges and fencerows provided excellent wildlife habitat.

However, in agricultural Ontario, major changes in habitat and consequently wildlife populations are occurring. Increasing intensification of agriculture has resulted in a switch from the mixed farm of the past to extensive monoculture in which an entire farm or entire agricultural community is devoted to the production of one or two crops. This change has been accompanied by increased application of pesticides and fertilizers and increasing mechanization. Fencerows, woodlots and wetlands have gradually disappeared from the landscape in highly productive areas. The features which made early farmland so attractive to wildlife were the first destroyed by an increasingly intensive agriculture.

In addition, because the Ontario human population has doubled since 1950 and continues to increase, the land base has been eroded by increasing urbanization. The formerly small communities which arose to service agriculture have evolved into sprawling urban complexes which are a major force destroying prime agricultural and wildlife areas.

Major changes have also occurred in land ownership. Increasingly urbanites are looking for a first or second home in the country. Frequently this demand is expressed in areas of good wildlife habitat near urban centres. The result has often been loss of good habitat, as development occurs in woodlots or other wildlife habitat, land takes on a manicured or groomed look and wetlands are filled or drained and destroyed. In addition, the growing prevalence of posting of private lands has removed public access from otherwise good wildlife habitat. Between 1950 and 1970, an estimated 17,250,000 acres (6,986,250 hectares) of "unimproved" land (i.e. wildlife habitat) was lost from census farms in Ontario.

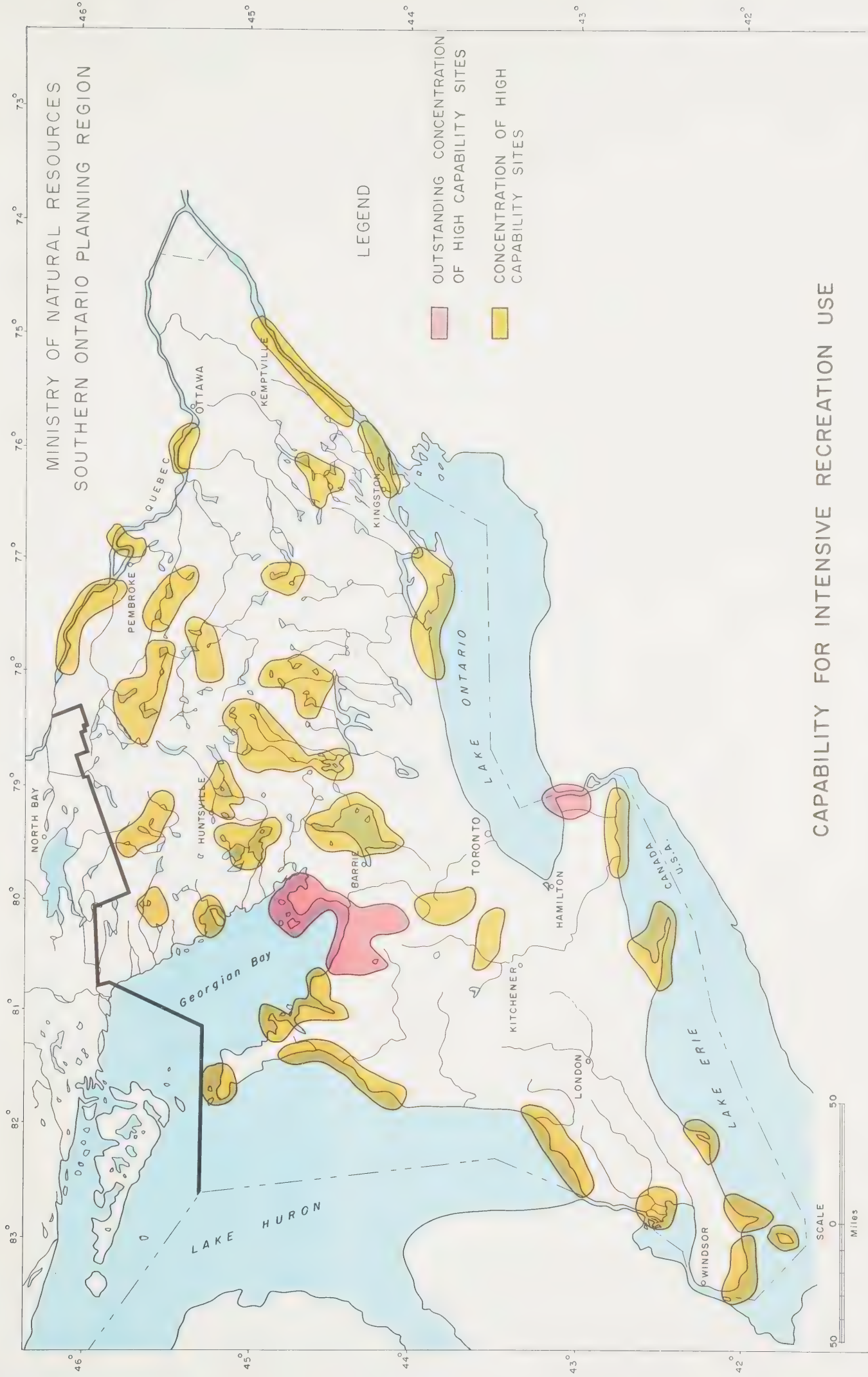
5. Outdoor Recreation

Southern Ontario has the potential to provide a variety of year-round outdoor recreation opportunities. The variations in topographic relief and vegetative cover of the land interspersed with and bounded by, a series of lakes and rivers systems, provide an opportunity for both intensive and extensive outdoor recreation activities.

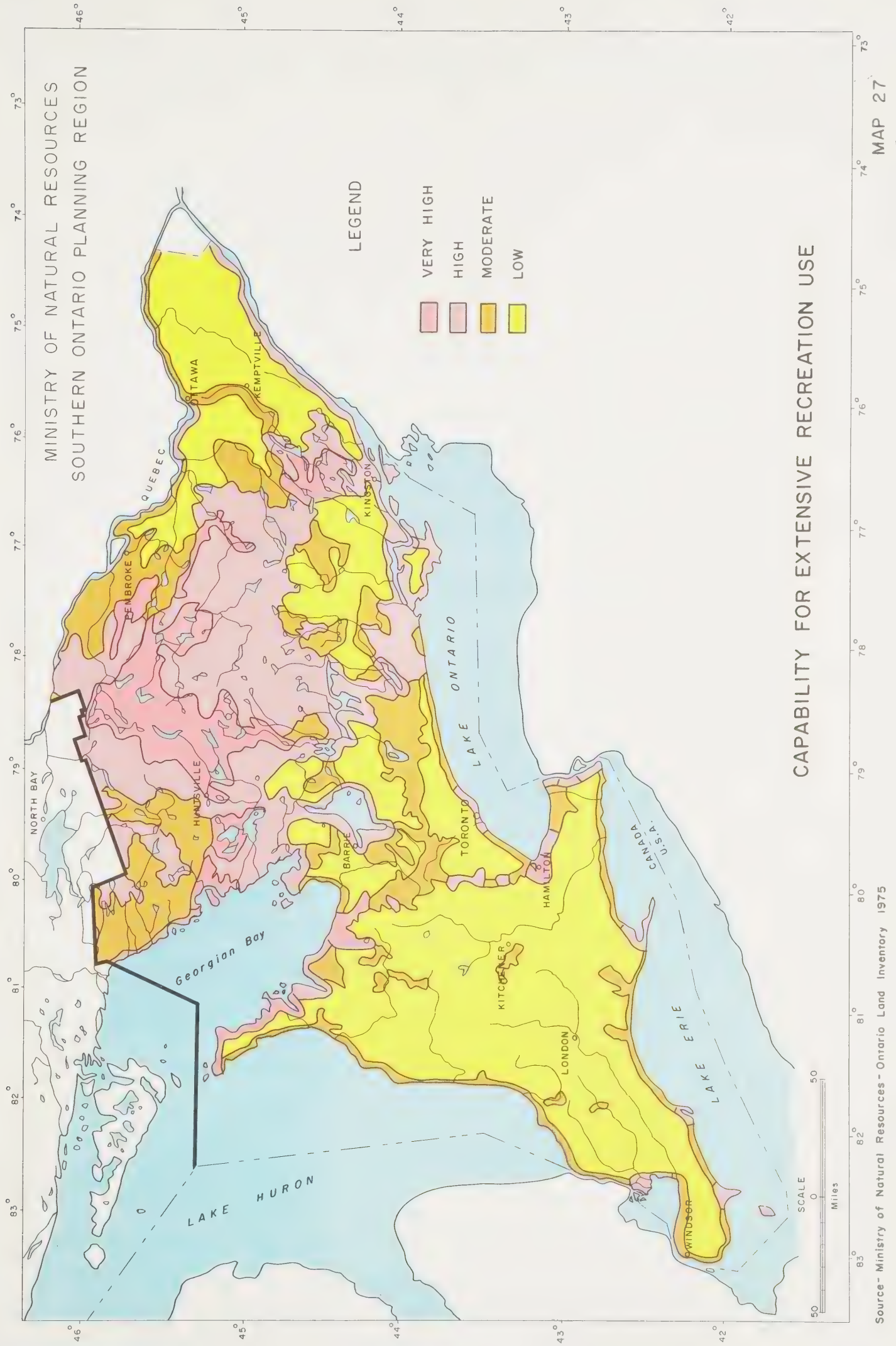
a) Intensive Recreation Capability

The Canada Land Inventory classification evaluates the landscape for its ability to attract and sustain outdoor recreation use. Areas ranked in the first three classes have been recognized as the most important for providing recreational opportunities for large numbers of people, i.e. intensive use. The activities that are associated with this type of outdoor recreation use include bathing, camping, lodging or cottaging, downhill skiing, and visiting historic sites or natural features.

Map 26 shows the areas within Southern Ontario which have high concentrations of Class 1, 2 and 3 recreation ratings. Two of these areas are identified as having outstanding concentrations of high capability land; they are Niagara Falls and Collingwood-Huron.



CAPABILITY FOR INTENSIVE RECREATION USE



b) Extensive Recreation Capability

Extensive recreation relates to such activities as walking, hiking, canoeing, cycling, cross country skiing, and automobile driving. The evaluation of extensive recreation used two factors, topographic classes and distribution patterns of water, since certain combinations of these make inherently attractive settings (Map 27).

A number of major areas with outstanding capability for extensive recreation use include portions of the Niagara Escarpment (i.e. Bruce county, Collingwood area, Hamilton-Dundas area), the Georgian Bay-Parry Sound shoreline, Muskoka Lakes, Haliburton highlands, Algonquin uplands, the Rice Lake area, St. Patrick Fault in Renfrew county, Rideau Lakes, and the Bay of Quinte.

Other areas of high capability include much of the Precambrian Shield. The Great Lakes shoreline is rated from high to moderate for extensive recreation use.

Many smaller areas within Southern Ontario have moderate to high ratings and are important regionally

or locally in that they are features which, together with the other areas mentioned, form a linear network. These include the Oak Ridges Moraine, the Oro Hills and the many river valleys.

6. Agriculture

Southern Ontario contains 12.9 million acres (5.2 million hectares), over 83 percent, of the high capability (C.L.I. Class 1, 2 and 3) agricultural land of the Province. These lands are the most suitable in the Province for the sustained production of cultivated field crops under good management. An additional 1.7 million acres (0.7 million hectares) have moderate capability (C.L.I. Class 4) for a more limited range of field crops and pasture.

The greatest concentration of these lands is in the Southern Lowlands, with lesser amounts in the Ottawa-St. Lawrence Lowlands. The Precambrian Shield does not contain a significant area of land in the top four classes. This class distribution pattern is shown on Map 28 and is expressed by Administrative Region in Table 13.

In some parts of Southern Ontario, considerable amounts of Class 5 and 6 lands are used for extensive grazing. While these lands are useful for this purpose, their carrying capacity is rather low.

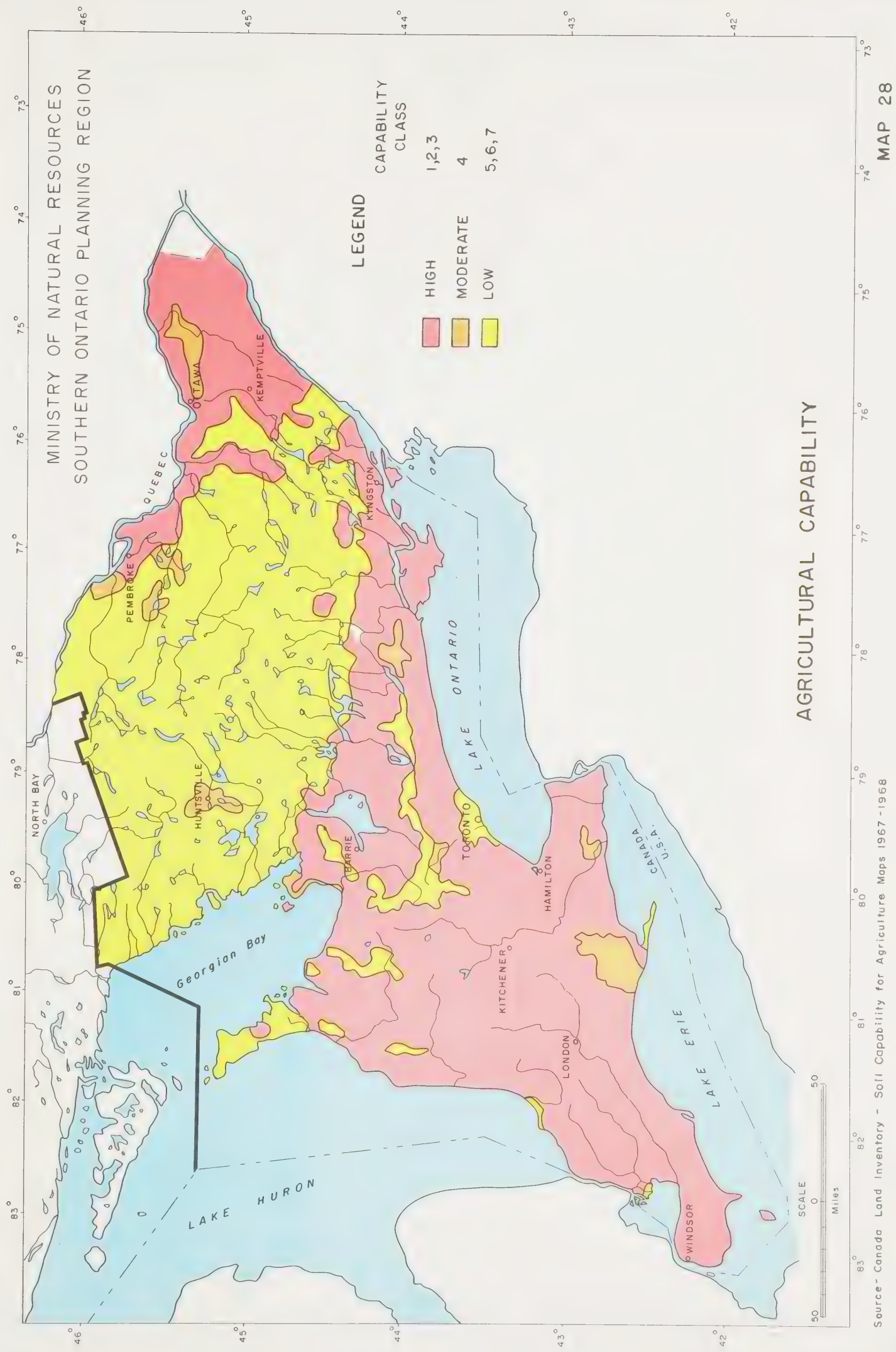


Table 13

Distribution of Agricultural Lands
by Administrative Region

	Thousands of Acres (Thousands of Hectares)		Percentage of Regional Land Area		Percentage of Agricultural Land in Planning Region	
Administrative Region	Agricultural Capability Class					
	1 to 3	4	1 to 3	4	1 to 3	4
Algonquin	301 (122)	336 (136)	3	4	2	2
Central	4,350 (1,762)	639 (259)	63	9	30	4
Eastern	2,407 (975)	401 (162)	35	6	16	3
Southwestern	5,847 (2,368)	296 (120)	80	4	40	2
Southern Ontario Planning Region	12,905 (5,227)	1,672 (677)				

Source: Agricultural Statistics 1971 Census

It is important to note that the Canada Land Inventory agricultural use capability classification does not rank organic soils, nor does it include capability of soils for fruits or ornamental plants.

Organic soils constitute approximately 1.2 million acres (0.5 million hectares) in Southern Ontario. Certain areas of organic soils, having been artificially drained and otherwise prepared, are highly productive of vegetables and other crops. The main examples of this are the Holland and Thedford Marshes, and the Point Pelee Marsh.

Certain other areas have a special combination of soil, climatic or other features that make them more valuable for special crops than the generalized agricultural use capability ratings would indicate. The light soils in the Alliston area, for instance, are highly productive for potatoes. The favourable climate found very locally along Georgian Bay and parts of Lake Ontario, make the Thornbury-Collingwood and the Brighton-Belleville-Picton areas important apple producers. More so, the highly favourable climate of the Hamilton-St. Catharines area makes possible the production of a wide variety of soft fruits. Finally, the sandy soils of Norfolk and parts of Elgin and Oxford counties and the relatively long

frost-free periods, combined with major management inputs make that area a major tobacco producer.

Also of interest to the Ministry of Natural Resources are the lands in Southern Ontario that do not possess high agricultural capability. Below the Precambrian Shield examples of such areas are: the Bruce Peninsula, the central Grey uplands, the Simcoe lowlands, the Oro Hills and the Oak Ridges Moraine. Due to their location relative to large population centres these areas are a significant feature of the Planning Region.

7. Historical Resources

Througnout Southern Ontario, there are many different kinds of historical resources representing significant past human activities. These resources include historical features and historical landscapes relating to Indian culture, missionaries and fur trade, agriculture lumber and mining.

a) Indian Culture

Two generalized patterns of economic behaviour typified the native peoples' cultures in this area.

One was a diffuse economy, which was based on a subsistence existence involving the exploitation of a

variety of food resources (both plant and animal), and requiring specialized skills and techniques, as well as flexibility, adaptability and mobility. There are very few creeks and streams in Southern Ontario which do not contain on their banks the remains of camp-sites and fishing-stations.

The second type of native peoples' economy, a focal economy, depended on one or a few like kinds of food and was probably never practiced in Ontario in its pure form. However, the introduction of maize agriculture and its relative stabilization by about 1000 A.D., resulted in semi-sedentary societies which banded together in villages but which also supplemented their diet by the means used in a diffuse economy described above. The remains of these cultures are often found in areas of arable hills somewhat removed from lakeshores and river banks, although never too far from a reliable source of drinking water.

b) Missionaries and Fur Trade

In the seventeenth century, the first European contact with the native peoples in Southern Ontario

concerned fur trading and missionary endeavours. Southern Ontario was the centre of very intensive fur trading during the New France period (1609-1760's) and later felt the effects of the presence of the Northwest Company and other furtrading associations along with many independent traders. Few traces still exist of the fur trade in Southern Ontario, although some archaeological remains of former posts might be found along the upper Ottawa River, Lake Nipissing and Georgian Bay areas.

c) Agriculture

Euro-Canadian agricultural settlement had an enormous impact on the landbase of Southern Ontario and the number of people involved was large enough to have a significant influence in shaping Ontario's economy and society. Presently, numerous historical farm houses, barns, churches, stores, artisan shops, colonization roads and mills are located throughout Southern Ontario, which are associated with early agricultural activities and agricultural communities.

d) Timber

Another significant historical activity which developed in the early nineteenth century was the forest industry. This involved the use of forest

resources for commercial and subsistence purposes and included the square timber trade (from 1809-1890's), lumbering (from the late 1830's), and the pulp and paper industry (from the 1860's). Numerous evidences still exist of former logging camps, log slides, logging roads and mills associated with past forest industry operations.

e) Mining

In Southern Ontario, mining activity did not have the formative impact that it had in the North, where it stimulated the growth of such towns as Cobalt and Porcupine. Generally, it was a widely scattered phenomenon which extended over long periods of time. In most cases, mining was associated with or subordinate to previous agricultural settlement.

Presently, there are sites of former mine workings, including old shafts, pits, open cuts and tailings which can be found scattered throughout Southern Ontario and which reflect the existence of some of this historical mining activity.

The foregoing are some of the past human activities which left tangible remnants in the landscape of Southern Ontario. Their existence

may be reflected in many different forms, including archaeological sites, historical buildings, ruins or foundations of former structures, technological remains such as roads, fences and bridges, and modifications of the land in the form of forest clearings or cropland.

V. Natural Resources Development and Use

Southern Ontario has undergone major development which is related to the favourable physiography and climate, the growth and distribution of population, and the degree to which people have utilized the resources to provide useful products, recreation opportunities and employment.

Southern Ontario occupies a major segment of the Windsor-Quebec axis, a dynamic area which displays conflicts¹ between intensifying urbanization and other land uses. Within this setting the natural resources are being subjected to increasing use pressures. Mineral resources, especially structural materials, are being heavily exploited; shorelines and other areas with high recreation capability are being highly developed for both public and private recreation use. A large part of the area is under intensive agricultural use, particularly in the southwest where both climate and soils are favourable. Large areas of land not suitable for agricultural use remain in forest, including the greater part of the Precambrian Shield area.

1

See the map The Windsor-Quebec Axis prepared for the federal Ministry of State for Urban Affairs by the Lands Directorate, Department of the Environment, Map ELD-3, (1974)

1. Mineral Resources Production

Mineral resource production in Southern Ontario is a significant part of the economy in terms of the kind of products, economic value and employment. It includes most of the Province's production of sand and gravel, stone materials, clay and shale, as well as significant quantities of certain ores. The Toronto area makes the greatest demands on these materials; however, all urban and industrial growth centres have substantial requirements. To a large extent mineral resource production relates to world demand which is expected to increase substantially in the years ahead.

The value of mineral production in the period 1969-73 averaged over 262 million dollars annually and provided direct employment to over 6,000 people. These figures do not include the substantial value of mineral products processed by secondary industry nor exploration and research activities.

The production of uranium is of particular interest since uranium is considered to be of strategic importance. In 1974, Ontario produced 85% of all uranium mined in Canada and 16% of the uranium extracted in the free world. Increasing demand and price for uranium in

recent years has led to renewed exploration in Southern Ontario, particularly in the Bancroft area.

In addition to its industrial value, the mineral resource has value as a recreation and tourism attraction. Rock-hounding and the collecting and viewing of minerals, rock formations and other geological phenomena provide a growing number of people with a fascinating pastime.

The mining products produced within each administrative region are shown on Table 14.

The value of production and the overall ranking of each Administrative Region within the Province is shown in Table 15. Southern Ontario accounts for approximately one-sixth of the provincial value of production, with the Central Administrative Region accounting for nearly half of this figure. The major share of the total value is made up of structural materials.

The location of active mining properties in Southern Ontario excluding sand and gravel, is shown on Map 29. Areas with substantial resources of sand and gravel are indicated on Map 17.

Table 14

Mining Products
By Administrative Region, 1968-72¹

PRODUCTS ²	ADMINISTRATIVE REGIONS			
	Algonquin	Central	Eastern	Southwestern
Brine and Salt				X
Calcium and Magnesium	X			
Cement		X	X	X
Clay	X	X	X	X
Gypsum		X		
Iron			X	
Lime		X		X
Nepheline Syenite	X			
Peat Moss		X	X	
Petroleum and Natural Gas		X		X
Quartz	X	X		
Sand and Gravel	X	X	X	X
Stone	X	X	X	X
Talc			X	

¹Adapted from statistics of Mineral Resources Branch, August 22, 1974

²Detailed information as to the volume and value of each product is not possible due to confidentiality requirements under the Statistics Act.

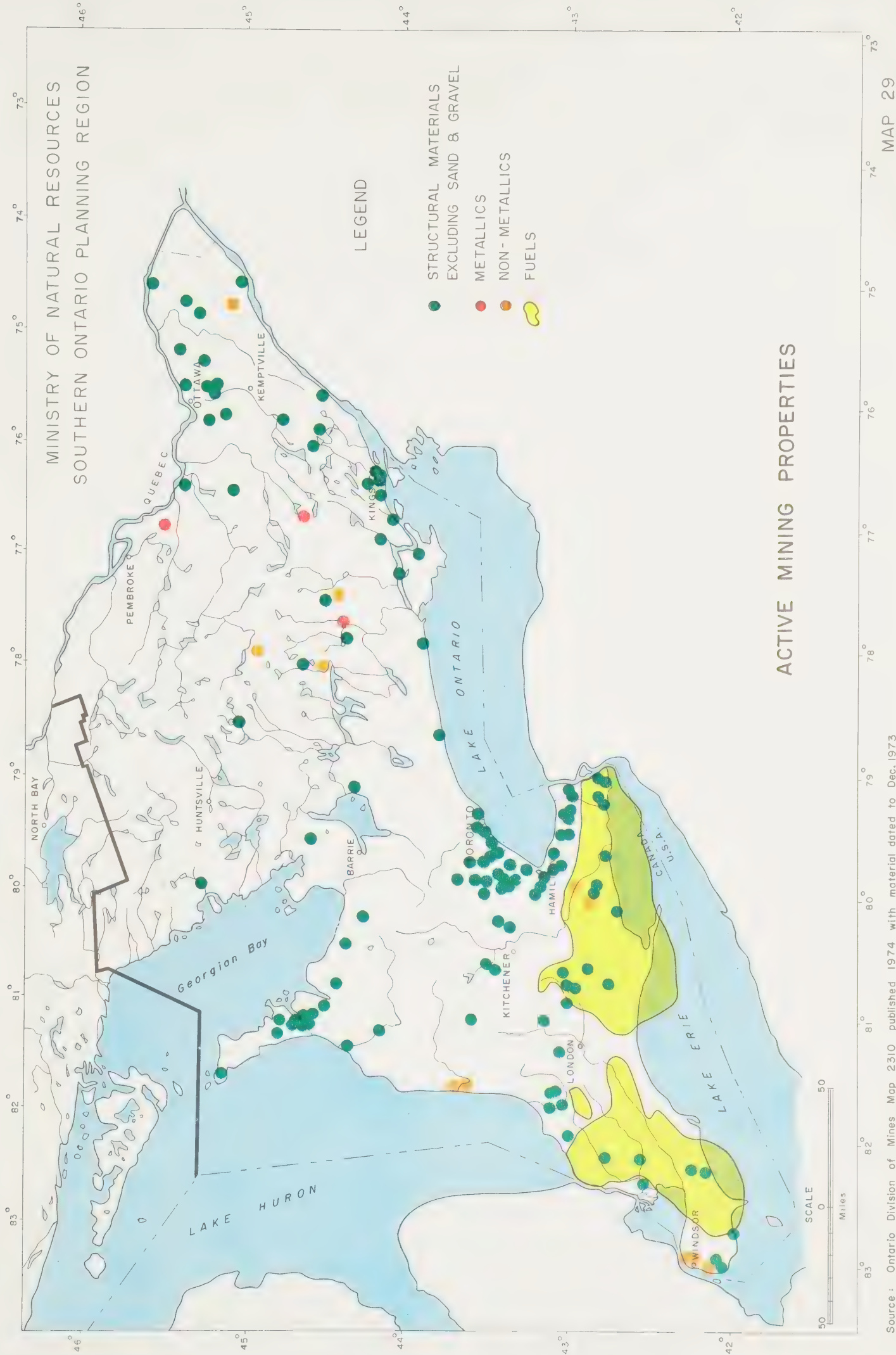
Table 15

Value of Mineral Output
by Administrative Region, 1969-73¹

Administrative Region	Total Value of Production (\$ Millions)									
	1969	Rank ²	1970	Rank	1971	Rank	1972	Rank	1973	Rank
Algonquin	16.5	8	15.0	8	13.2	8	13.0	8	16.1	8
Central	97.7	4	102.1	4	122.1	3	127.1	4	147.6	3
Eastern	39.7	6	42.5	6	42.6	6	49.0	7	57.6	7
Southwestern	66.4	5	71.9	5	78.9	5	85.3	5	102.7	6
Southern Ontario Planning Region	220.3		235.6		256.8		274.4		324.0	
Ontario	1223.4		1590.1		1554.2		1534.8		1852.9	
Planning Region Share of Provincial Output	18%		15%		16%		18%		17.5%	

¹Adapted from statistics of Mineral Economics Section, April 1975.

²Ranked order of value for the eight Ministry of Natural Resources Administrative Regions.



a) Structural Materials

Structural materials which include cement, sand, gravel, stone, clay and lime are the most important single group of products found in Southern Ontario. Although the production of structural materials has remained stable or declined slightly since 1970, the value generally has continued to increase.

Cement production is concentrated along the north shore of Lake Ontario in Bowmanville, Colborne, Picton and Bath with additional plants near Woodstock and St. Mary's. In 1974 production was more than 4.4 million tons (4.0 million tonnes) valued at over 90.5 million dollars. Sand and gravel production is presently 75 to 80 million tons (68 to 73 million tonnes) annually with a value of approximately 60 to 70 million dollars. Construction aggregates from bedrock resources are quarried widely, being especially important in eastern Ontario, and approach 40 million dollars in value. Stone, clay products and lime are valued at over 80 million dollars annually.

Three significant studies of mineral aggregate supply and demand have been completed for parts¹ of central, eastern and southwestern Ontario.

The demand for mineral aggregate is increasing; central Ontario alone consumes up to one half of the annual provincial total. Although the total reserve of mineral aggregate is much in excess of projected demand, the actual potential supply available is much lower. This is due to urbanization over deposits and restrictive municipal zoning regulations which effectively remove the resource from use.

In comparing supply and demand projections, several assumptions are made, among them: (1) that a supply of at least twice demand is necessary to² economically meet demand, and (2) that all existing restrictions on aggregate removal will remain in force.

1

Ontario Ministry of Natural Resources, Mineral Aggregate Study - Central Ontario Planning Region, Proctor & Redfern Ltd., March 1974; and, Mineral Aggregate Studies & Geological Inventory - Part of Eastern Ontario Region - Proctor & Redfern Ltd., April, 1976; and Mineral Aggregate Studies and Geological Inventory - Part of Southwestern Ontario Region - Proctor and Redfern Ltd., November 1976.

2

In the report "A Policy for Mineral Aggregate Resource Management in Ontario", prepared by the Ontario Mineral Aggregate Working Party, 1977, it was recommended that a licencing capacity of only 125 percent of demand should be used to ensure supplies equal to any contingency

The net result for the central portion of Southern Ontario is that the area can only remain self-sufficient in mineral aggregates for perhaps 15 to 20 years. In the eastern Ontario study area the rock reserves are immense and there is no immediate concern for their depletion. For sand and gravel, however, the reserves are modest and may be depleted as early as 1985. In fact, many municipalities already suffer from a severe lack of sand and gravel materials. Quality of aggregate is an additional concern in this area particularly with reference to suitability for concrete and asphalt applications.

It is assumed the overall mineral aggregate situation for all Southern Ontario will be similar to that of the three study areas. Shortages of mineral aggregate could occur within 15 to 20 years or earlier in some instances.¹

b) Non-Metallics

The second most important group of mineral products are the non-metallics. Salt and nepheline syenite are the major contributors to the group but gypsum

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In the Report "A Policy for Mineral Aggregate Resource Management in Ontario", prepared by the Ontario Mineral Aggregate Working Party, 1977 (Appendix 4), it is suggested that based on more recent estimates of demand sand and gravels reserves in the Central Region should be sufficient to the year 2005 and crushed stone to the year 2025. With respect to Ontario as a whole, total supplies of aggregate were considered adequate to the year 3000.

and talc are also produced. Since 1970, overall non-metallic production has remained stable although the value has continued to increase.

The salt industry is centred in large deposits at Windsor, Sarnia and Goderich which accounts for over 75 percent of the salt produced in Canada. The value of production has been increasing steadily in recent years and totalled 35.9 million dollars in 1974.

High quality nepheline syenite, which is used in the glass and ceramics industry, is produced by two mines at Nephton north of Peterborough. Production has been rising gradually since the early sixties and in 1974 reached 607,000 tons (550,549 tonnes) valued at 8.5 million dollars.

Gypsum for plaster and related products is produced at Hagersville and Caledonia in the Regional Municipality of Haldimand-Norfolk. In 1974 production was 825,000 tons (748,275 tonnes), valued at 2.8 million dollars. Talc production is carried on at Madoc in Hastings county. Annual production is approximately 30,000 tons (27,210 tonnes).

c) **Metallics**

The metals being produced in Southern Ontario are iron, zinc, calcium and magnesium.

Iron is produced from an open pit mine near Marmora. It is expected that production will continue until 1980. It currently produces 900,000 tons to one million tons (816,300 tonnes to 907,000 tonnes) per year and employs 300 to 330 people.

The sole Canadian producer of calcium and magnesium operates at Haley Station in Renfrew County. Production in 1974 was 14.1 million pounds (6.4 million kilograms) with a value of 10 million dollars)

Overall, these metallics will diminish in quantity in the immediate future. It is likely that this will be offset by uranium production in the Bancroft area where there are known deposits of uranium which can be developed with suitable demand and pricing. Exploration in the area has been resumed and a mine has reopened. Providing uranium as an energy source will be a multi-million dollar industry that can be shared by Southern

Ontario. A lead time of at least eight years is required before production could begin at a new mine and the resultant uranium used to fuel a nuclear generating station.

d) Fuels

All mineral fuels in Ontario are produced in Southwestern Ontario. The value of natural gas and petroleum production in 1974 was approximately 6.5 million dollars. The main production areas are Lake Erie and the counties of Lambton, Kent, and Elgin, and the Regional Municipality of Haldimand-Norfolk. In 1974 over 750,000 barrels of crude oil and 7,530 million cubic feet (213 million cubic metres) of natural gas were produced from 1,130 wells. Significant exploration activities continue in Lake Erie and Lambton, Kent and Huron counties. In the future, with higher prices for both oil and gas it is expected that the value of production will rise.

In Ontario, petroleum products make up 40.9 percent of the total energy consumed while natural gas makes up 22.6 percent. Southern Ontario produces 0.4 percent of Ontario's oil requirements and 1.6 percent of its natural gas needs.

e) The Future

Mineral extraction, especially the provision of large quantities of structural materials, is an essential industry in Southern Ontario. However, certain conflicts have arisen due to the nature and location of these operations in competition with other land uses.

A most serious problem to be resolved concerns the structural materials which are largely situated where there is a concentration of rural residential and urban development. Planning for sequential land use is required to allow the mineral deposits to be extracted and the sites rehabilitated prior to development.

Much of the concern over loss of environmental values and the degree of hazard and nuisance caused to people who live near an operation can be minimized by provisions similar to those of the Pits and Quarries Control Act. Past problems, considered in their historical perspective suggest that the success of future operations will be measured against high standards of performance.

Measures to avoid wasteful use and reserve deposits for future use can be accomplished to the extent that society can accept temporary nuisance and site rehabilitation as a part of the cost of the mineral resources, and can accept the changes in landscape that take place between the original state and the depleted but rehabilitated state.

A healthy mining industry depends on a satisfactory rate of discovery to replace finite and non-renewable deposits as they are used up. Efforts are being made to encourage exploration. These actions include policy stabilization and delineation of favourable geologic areas as a first step to ensuring that these areas receive at least mineral potential evaluation and preferably active exploration.

2. Forest Production

The productive forest land base of Southern Ontario is 13 million acres (5 million hectares) or 43 percent¹ of the total land area.

¹ Division of Forests, Forest Production Policy Options for Ontario, Revised February 1976, Ontario Ministry of Natural Resources, 1976.

Table 16

Forest Land Base
Southern Ontario Planning Region

Administrative Region	Productive Forest Land (Gross Area)		
	Crown	Patent thousands of acres (thousands of hectares)	Total
Algonquin	3,946 (1,598)	2,754 (1,115)	6,700 (2,714)
Central	111 (45)	1,425 (577)	1,536 (622)
Eastern	592 (240)	3,364 (1,362)	3,956 (1,602)
Southwestern	51 (21)	932 (377)	983 (1,398)
Southern Ontario Planning Region	4,700 (1,903)	8,475 (3,432)	13,175 (5,336)

Administrative Region	Estimated Land Base for Forest Production (Net Area)		
	Crown	Patent thousands of acres (thousands of hectares)	Total
Algonquin	2,925 (1,185)	2,035 (824)	4,960 (2,009)
Central	58 (23)	883 (358)	941 (381)
Eastern	201 (81)	2,026 (821)	2,227 (901)
Southwestern	26 (11)	875 (354)	901 (365)
Southern Ontario Planning Region	3,210 (1,300)	5,819 (2,357)	9,029 (3,657)

Source: Ontario Ministry of Natural Resources, Forest Production Policy Options for Ontario, Revised February, 1976.

The growing of forest products requires a constant land base. The productive forest land area provides for various uses besides the growing of merchantable timber and other forest produce. Therefore, deductions have been made for the long term requirements of other legitimate forest uses (e.g. parks, special wildlife areas and utility corridors) and for protection forests (i.e. sites with fragile conditions and/or very low productivity).

Table 16 summarizes the distribution of forest land by Administrative Region and ownership for Southern Ontario. The estimated land base for forest production is 9 million acres (4 million hectares) or 68.5 percent of the productive forest.

The current total allowable cut for Southern Ontario has been estimated to be 300 million cubic feet (8 million cubic metres); about 70 million cubic feet (2 million cubic metres) from Crown and agreement forest land and 230 million cubic feet (7 million cubic metres) from private land.

Approximately 36 percent of the production forest land is in Crown ownership. These lands are largely located in the Algonquin and Eastern Administrative Regions.

While the major timber management effort occurs on the extensive Crown areas, the scattered privately owned forests are essential to meet present and future industry requirements.

To encourage the growth and good management of timber resources on private lands, there has been an advisory extension service in existence for several decades and in 1956 the Woodlands Improvement Act (W.I.A.) was introduced. Since that time there have been in excess of 3,675 private land forest agreements established which cover 190,000 acres (76,950 hectares). Over 250,000 acres (101,250 hectares) of forest land is managed by the Ministry of Natural Resources under sixty agreements with counties, municipalities and conservation authorities. The agreement forest lands have received a large portion of the forest management attention in Southern Ontario but represent only 2.8 percent of the production forest area.

The forests of Southern Ontario presently provide an estimated annual wood volume of 94 million cubic feet (2.6 million cubic metres). Nine million cubic feet¹ are exported in the raw wood state. The balance 85 million

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In 1973-74, based upon mill licence returns

cubic feet (2.4 million cubic metres), constitutes 65 per-cent of the wood processed by the wood-using industries in Southern Ontario. An additional 19 million cubic feet (0.5 million cubic metres) are provided from elsewhere in the Province and 27 million cubic feet (0.7 million cubic metres) are imported.

The direct economic benefits to accrue from forest production in Southern Ontario have been significant. Furthermore, society has recognized other important social benefits that the forests provide (e.g. quality open space, recreational opportunities, fish and game habitat, water and soil conservation, and improved air quality).

Although Southern Ontario has only 13.6 percent of the productive forest area in the Province, the forest industry provides significant employment in the area. A survey in 1969 determined 47,000 jobs directly related and 131,000 jobs indirectly related to the forest industry.¹ This represented some 60 percent of the total primary and secondary forest industry employment in the Province.

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Hedlin Menzies and Associates Ltd., The Ontario Forest Industry, Ontario Department of Lands and Forests, 1969.

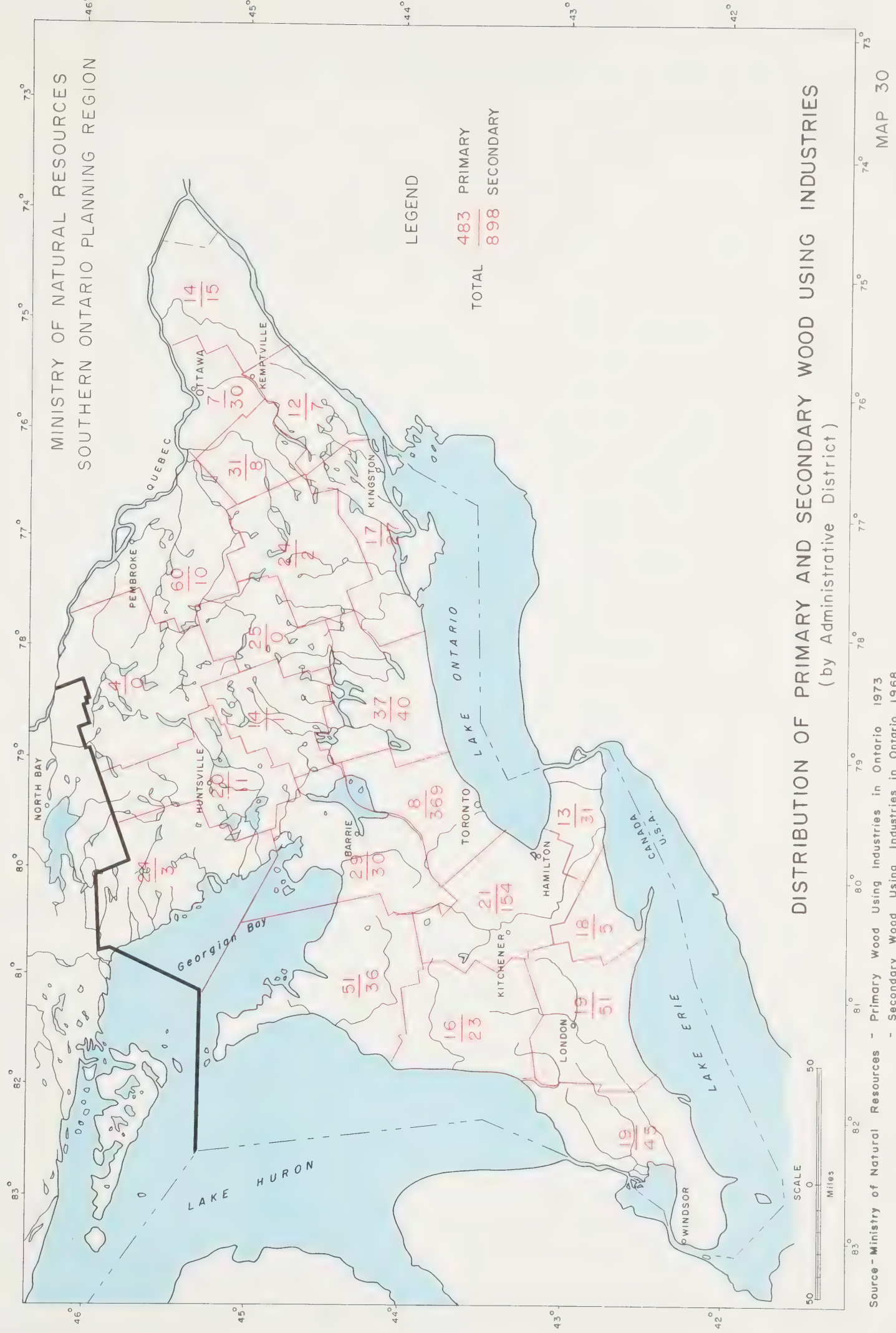


Table 17 and Map 30 show that there are 483 primary and 898 secondary wood-using industries located in Southern Ontario. Primary industries are distributed throughout Southern Ontario while secondary industries are heavily concentrated around the metropolitan areas, especially Toronto, Hamilton and Kitchener.

World demand for forest products is expected to increase by about 50 percent between 1974 and 1990. It is expected that annual growth will be inadequate to meet this demand well before 1990. A world shortage of wood is predicted within 15 to 20 years.

Estimates of Ontario forest industry requirements are based on a number of factors, including:

- projections of foreign demand for Canadian and Ontario exports;

- the assumption that the growth in demand for pulpwood and for logs and bolts will continue, while the miscellaneous demand will remain constant;

- projections of the production of primary and secondary wood products and of pulp and paper; and

- "the extra-ordinary and unprecedented expansion" of the Ontario forestry industry.

Based on these considerations, the best estimate of the wood required in Ontario by the year 2025 is considered

Table 17

Primary and Secondary Wood-Using Industries
Southern Ontario Planning Region

Administrative Region	Primary	Secondary
Algonquin	147	25
Central	108	624
Eastern	105	89
Southwestern	123	160
Southern Ontario Planning Region	483	898

Source: Ministry of Natural Resources, Primary Wood Using Industries in Ontario 1973
 Department of Lands and Forests, Secondary Wood Using Industries in Ontario 1968

to be an annual roundwood equivalent of 1,200 million cubic feet (34 million cubic metres). This represents approximately a 90 percent increase over the present cut. No specific projections of demand or consumption have been made for Southern Ontario.

For Southern Ontario it is assumed that the increased demand for wood products will be similar to that of the Province as a whole. Of particular concern in this region are the various industries which require high quality hardwood much of which is now being imported from the United States of America. Although the United States has a surplus of wood at the present, a shortage is predicted by the year 2020.

3. Commercial Fisheries

Commercial fishing activity in Southern Ontario is concentrated primarily on the Great Lakes. This industry is the largest producer of freshwater fish in Canada.

The present status of the commercial fishing industry is largely a result of the dramatic changes that have occurred in the resource base and of social attitudes

that presume that recreational and commercial fisheries are incompatible. There is particular concern about the presence of contaminants such as mercury and pesticides in the fisheries of Southern Ontario.

The commercial harvest from Lake Huron is in the order of 2.3 to 2.8 million pounds (1.0 to 1.2 million kilograms) of fish annually. The once prosperous fishery for lake trout and lake whitefish has dwindled to a relatively significant level as a result of the combined effects of sea lamprey predation and to a lesser degree, heavy exploitation. The fishery continues to harvest remaining lake whitefish stocks, some yellow pickerel and lower-valued deepwater chub and yellow perch populations. The skills and technology to rebuild the industry still exist. With the success of rehabilitation programs the Lake Huron fishery could be restored to a more productive state. It is acknowledged that increasing recreational demand will restrict to some degree, commercial operations in inshore waters.

Lake St. Clair supported a stable commercial fishery for a number of years. The live-trapping of "panfish" species for pay-pond markets in the United States was a profitable venture for several commercial operations. Since April, 1970, the Lake St. Clair commercial fishery has been

completely closed because of the discovery of high mercury levels in fish. The problem of mercury contamination remains the major obstacle preventing the revival of this fishery.

Commercial operations on Lake Erie currently yield 35.8 to 36.7 million pounds (16.2 to 16.7 million kilograms) of fish annually. The lake has experienced the successive loss of a number of valuable fish stocks coupled with wide fluctuations in species abundance. Yellow perch have recently been subject to heavy fishing and there are signs that stocks may have been adversely affected. High mercury levels have been discovered in some fish species and Lake Erie fishermen have been subject to certain restrictions on fishing. In spite of these serious problems, Lake Erie has continued to provide an abundant harvest of useful fish. The versatility of the commercial fishing industry has been reflected in shifts to less valuable species. Although significant increases in employment opportunities cannot be expected, efforts to protect and maintain the more valuable species such as yellow pickerel, may increase the value of this fishery.

The history of commercial fish production for Lake Ontario is similar to that of the other Great Lakes. The situation

in the deeper western basin is comparable to that of Lake Huron; existing fish stocks are generally dominated by low value species such as the rainbow smelt and the alewife. Eastern Lake Ontario, primarily the Bay of Quinte, is experiencing problems similar to those which characterize Lake Erie. Eutrophication and declining populations of certain fish species (e.g. yellow pickerel) are problems which must be dealt with. The total annual commercial yield for Lake Ontario averages 2.3 to 2.4 million pounds (1.0 to 1.2 million kilograms) of fish.

The annual commercial harvest from Southern Ontario inland waters averages 0.5 million pounds (0.2 million kilograms). The minimal fishery in these waters is largely a product of the limited markets for many of the available species and prevailing social attitudes that presume that commercial and recreational fishing are not compatible. Several species fished commercially in Southern Ontario have traditionally received poor market acceptance; markets are often scarce and prices prohibitively low for such species as mullet (suckers) and carp. If consumer interest can be created and strong accessible markets developed, a moderate increase in the commercial harvest from inland waters could result without adverse effects on the sport fishery.

Table 18

Current Annual Harvest and Percent of Total by Species Group for Major Water Areas¹
Southern Ontario Planning Region

Species Group	Lake Huron		Lake Erie		Lake Ontario		Southern Inland Waters		Species Group Totals
	Million lbs. (Million Kgms)	%	Million lbs. (Million Kgms)	%	Million lbs. (Million Kgms)	%	Million lbs. (Million Kgms)	%	
Trout-Whitefish	1.575 (0.715)	57	0.002 (0.0009)		0.091 (0.041)	4	0.016 (0.007)	3	1.684 (0.763)
Perch-Yellow Pickerel	0.529 (0.240)	19	19.490 (8.848)	54	0.552 (0.250)	24	0.030 (0.013)	5	20.601 (9.351)
Smelt-Alewife	0.1362 (0.061)	5	13.6062 (6.177)	38	0.209 (0.094)	9			13.951 (6.332)
Sunfish-Pike	0.040 (0.018)	1	1.295 (0.587)	4	0.591 (0.268)	26	0.121 (0.054)	22	2.047 (0.927)
Carp	0.470 (0.213)	17	1.410 (0.640)	4	0.683 (0.310)	29	0.375 (0.170)	68	2.938 (1.333)
Others	0.016 (0.007)	1	0.001 (0.0004)		0.185 (0.083)	8	0.011 (0.004)	2	0.213 (0.094)
Lake Totals ³	2.766 (1.255)		35.804 (16.255)		2.311 (1.049)		0.553 (0.251)		41.434 (36.320)

¹Current 10 year average, 1964-1973, excluding Lake St. Clair.

²Combined smelt production and estimate of alewife-shad production.

³At time of publishing annual harvest information became available for the 10 year period 1966-1975. The estimated average harvest for that more recent 10 year period is indicated below.

	Lake Huron	Lake Erie	Lake Ontario	Southern Inland Waters	Total
	Million lbs. (million kgm)	Million lbs. (million kgm)	Million lbs. (million kgm)	Million lbs. (million kgm)	Million lbs. (million kgm)
Lake Totals	2.3 (1.0)	36.7 (16.7)	2.4 (1.1)	5 (.2)	41.9 (19.0)

Table 19

Value of Commercial Fish Harvest, 1975
Southern Ontario Planning Region

Waterbody	Catch millions lbs. (millions Kgms)	Value (\$000)	% of Provincial Total Value
Lake Huron ¹	1.8 (.81)	1,019	9
Georgian Bay	1.1 (.50)	649	6
Lake Erie	30.5 (13.8)	6,009	54
Lake Ontario	2.8 (1.2)	782	7
Southern Inland	.4 (.18)	110	1
Total	35.29 (16.02)	8,569	77
Provincial Total	43.20 (19.61)	11,052	

Table 20

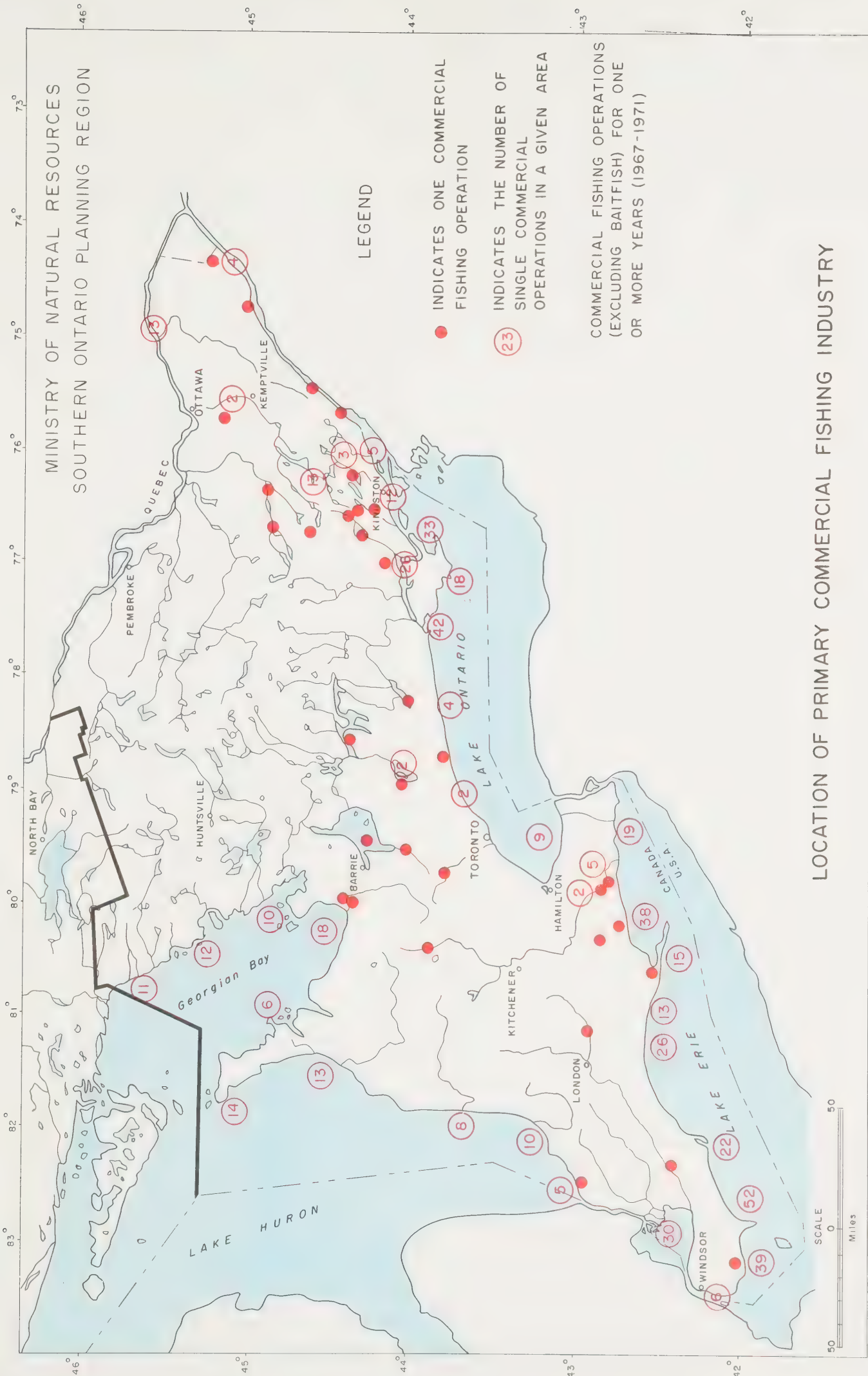
Commercial Fishing Operators and Numbers Employed, 1972
Southern Ontario Planning Region

Waterbody	Number of Operations	% of Operations in S. Ontario	Number ¹ Employed
Lake Huron ²	57	10.3	135
Georgian Bay	50	9.0	117
Lake Erie	224	40.3	639
Lake Ontario	157	28.2	369
Southern Inland	68	12.2	88
Total	556		1,348

¹includes both full and part-time employees

²does not include North Channel

Source: Commercial Fish and Fur Branch, 1975



Bait fish operations are an increasingly important segment of the commercial freshwater fish industry. The present harvest is in the order of 70 to 90 million bait-fish, each year. Development of this aspect of the commercial industry should benefit both the industry and the angler, while at the same time affording the resource the required protection. Cautious expansion of the bait fish industry in Southern Ontario may be possible. However, the role of bait fish species as food for larger fish of commercial and recreational significance must be acknowledged.

In recent years, commercial fishing operations in Southern Ontario have harvested an average of 41.4 to 41.9 million pounds (18.8 to 19.0 million kilograms) of fish annually. The current annual harvest by species group is summarized in Table 18, for each of the major commercial fishing areas. The value of commercial fishing for 1975 amounted to 8.6 million dollars, almost 80 percent of the total figure for the Province (see Table 19).

In 1972, approximately 560 commercial fishing operations (excluding bait fish) in Southern Ontario employed in excess of 1,300 people in the primary sector (see Table 20 and Map 31). Almost half of the fishermen employed in Southern Ontario were operating on Lake Erie, while less than 7 percent were employed on inland waters.

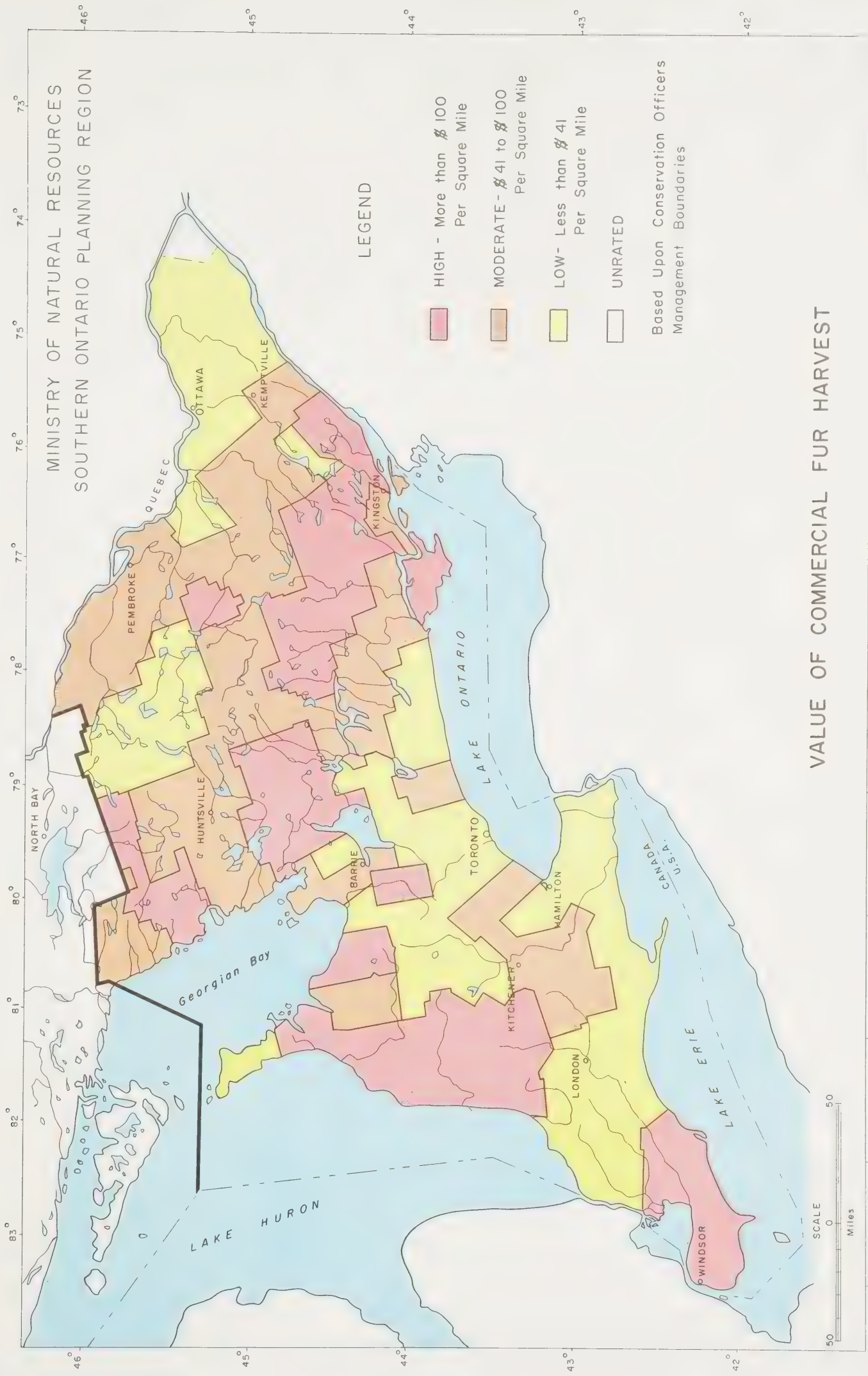
Although the commercial fishing industry may seem relatively insignificant when compared to other primary industries, it is of considerable importance to local and regional economies. In light of the increasing demand for protein and the Ministry commitment to provide resource employment opportunities and to ensure optimum use of the resource, it seems probable that this industry will increase its relative importance in the future.

4. Commercial Fur

a) Fur Resource

The primary furbearers in the southern portion of Southern Ontario are muskrats, foxes and raccoons. Beaver assume major importance from the standpoint in dollar value and quantity in central and northern areas.

The abundance of beaver is of nuisance proportions in the central and southeastern areas. Throughout the northern part of Southern Ontario (with minor exceptions), beaver populations are considered higher than suitable for the sustained carrying capacity of the range.



b) Trapping

Trappers within Southern Ontario seldom are dependent upon trapping as a sole means of support, and are likely to engage in trapping for recreational as well as economic benefits.

Southern Ontario contains more than one-half of the total number of trappers in the Province. The value of the fur crop from 1973-74 data was approximately 3.6 million dollars which represented 45 percent of the provincial total of 8.2 million dollars. Map 32 shows the value of the commercial fur harvested per square mile.

c) Fur Industry

One hundred and thirty-two of the 275 fur dealers and tanners in the Province are located within Southern Ontario, many of them major manufacturers of finished products.

At present a significant portion of the raw fur crop is exported and finished in eastern Europe. Periodic trade deficits in these countries affect their fur imports. This is the current cause of major fluctuations in demand, and not the vagaries of style which are often cited.

Market stabilization is one of many advantages in producing finished products at home. It is estimated that a strengthened secondary fur industry located within the major centres of Southern Ontario could increase earnings at least 100 percent, with perhaps a 50 percent growth in employment opportunities.

Petroleum-based artificial furs have provided competition for the natural products but may not continue to be economically attractive alternatives in the future.

5. Outdoor Recreation Opportunities

a) Participation and Supply

A wide variety of outdoor recreation opportunities is provided on both public and private lands in Southern Ontario. These opportunities fulfill a vital role in providing for the needs of the population of Southern Ontario as well as the needs of the non-resident population entering the region.

Results of the Ontario Recreation Survey of Ontario residents reveal some relevant characteristics of recreation participation. The large majority of

recreation activities in which more than 20 percent of residents participate are outdoor activities, frequently requiring specially designated and developed areas for their pursuit. Participation in six of the more common outdoor recreation activities (angling, boating, picnicking, camping, swimming, hiking) exceeds 230 million occasions annually (Table 21). The study identified that approximately one-quarter of all weekend recreation trips in the Province are to the Algonquin Administrative Region and other parts of the Georgian Bay area within Southern Ontario. The study also showed that the majority of recreation participation took place from home base on a day-use (non-overnight) basis within 25 miles of home.

The study demonstrated the relationship between recreation participation and socio-economic characteristics including income, education and age. Participation rates in outdoor recreation activities are much greater among young people, higher income groups and those with higher levels of education than other segments of the population.

Table 21

Participation in Selected Recreation Activities
Southern Ontario Planning Region

Activity	Total Occasions ¹ of Participation (millions)	Occasions of ¹ Participation per capita
Angling	22.9	4.1
Boating	30.2	5.4
Picnicking	23.9	4.2
Camping	17.4	3.1
Swimming	120.5	21.4
Hiking	17.5	3.1
Total	232.4	

¹Based on population 12 years of age and older (5,628,152)

Source: Ontario Recreation Survey, 1975

The tourism component of outdoor recreation in Southern Ontario is significant. The use of outdoor recreation facilities and resources by non-Ontario residents is only one aspect of the overall economic impact of park and recreation areas. In addition to encouraging expenditures by out-of-province visitors, the provision of public outdoor recreation areas or facilities assists in the redistribution of money within the Province, provides local or regional employment opportunities, aids in development of leisure related sales firms and manufacturing industries, and encourages complementary development in the private sector.

The question of the adequacy of the existing recreational opportunities in Southern Ontario to meet current and anticipated needs is not easily answered. Much remains to be known about the nature of desired participation in recreational activities throughout the area. However, estimates have been derived which provide an initial look at this situation.

A 1976 study examined the availability to the population of several types of recreational opportunities.¹ The results give an indication of the adequacy of existing opportunities to accommodate existing and future needs of the population in Southern Ontario. On the basis of these results, efforts were made to define the nature and extent of deficits in supply of opportunities.

Availability of opportunities was assessed by obtaining estimates of existing supply for five areas of jurisdiction: federal, provincial, regional, municipal and private commercial. Existing supply was allocated among major population centres in Southern Ontario and the resulting supply available within 2 or 3 hours travel of these centres was examined. The study also allocated a specified proportion of the supply for each recreation zone to non-residents (i.e. users from outside Southern Ontario) to more accurately represent the amount of supply actually available to residents.

1 Ministry of Natural Resources, Determination of Outdoor Supply Targets for the Provincial Parks System in Southern Ontario, 1976.

Tables 22 and 23 indicate per capita supply of day-use and camping opportunities for 25 urban centres in Southern Ontario. These figures include only the supply of opportunities available within the Province.

A similar type of procedure was also used to examine provincially supplied opportunities for hunting and fishing within 3 hours travel of¹ seven major population centres. Table 24 summarizes the results of these investigations.

For each of the recreational activities considered there is substantial variation in the level of supply available to the population centres.

If it is assumed that existing resources and facilities are used to capacity, and if the present rate of participation in recreation activities does not decrease, an up to 50 percent increase in the supply of recreation opportunities would be required to meet projected demand.

1

Ontario Parks Integration Board, Towards an Outdoor Recreation Policy for Ontario, Phase 1 Recreation Supplied on Provincially-Operated Facilities, 1972.

Table 22

Day-Use Opportunities Per Capita for Picnicking and Bathing
Southern Ontario Planning Region

Population Centres	Supply Per Capita					
	All Jurisdictions ¹			Provincial Facilities ²		
	Picnicking	Bathing	Total	Picnicking	Bathing	Total
Windsor	1.4	1.6	3.0	1.1	0.56	1.7
Chatham	4.5	2.4	6.9	1.4	0.90	2.3
Sarnia	4.5	2.9	7.4	1.4	1.6	3.0
London	4.5	2.0	6.5	1.4	0.9	2.3
St. Thomas	4.5	4.5	9.0	1.4	2.4	3.8
Woodstock	4.5	3.2	7.7	1.4	1.4	2.8
Stratford	4.5	10.3	14.8	1.4	2.6	4.0
Owen Sound	4.5	10.3	14.8	1.4	3.1	4.5
Guelph	4.5	3.3	7.8	0.46	0.57	1.0
Kitchener	4.3	3.7	8.0	1.0	0.49	1.5
Brantford	4.5	3.1	7.6	1.0	1.1	2.1
Simcoe	4.5	4.8	9.3	1.4	2.5	3.9
Niagara	3.4	2.1	5.5	0.44	0.44	0.9
Hamilton	3.3	2.3	5.6	0.28	0.44	0.7
Oakville	4.4	2.7	7.1	0.35	0.94	1.3
Brampton	4.1	2.4	6.5	0.34	1.1	1.4
Toronto	1.7	1.2	2.9	0.21	0.57	0.8
Barrie	4.5	8.2	12.7	1.2	3.1	4.3
Oshawa	4.5	2.9	7.4	1.1	1.3	2.4
Peterborough	4.5	2.5	7.0	1.4	1.2	2.6
Belleville	4.5	5.3	9.8	1.4	3.1	4.5
Kingston	4.2	1.8	6.0	1.4	1.6	3.0
Cornwall	3.6	1.3	4.9	1.4	1.0	2.4
Ottawa	1.1	0.3	1.4	0.66	0.15	0.8
Pembroke	2.7	1.5	4.2	0.94	0.38	1.3
Average	3.0	2.4	5.4	0.71	0.94	1.7

¹Federal, Provincial, Regional, Municipal, Private Commercial

²Provincial facilities and areas only.

Source: Ministry of Natural Resources, Determination of Outdoor Recreation Supply Targets for the Provincial Parks System in Southern Ontario, 1976

Table 23

Camping Opportunities Per Capita (1976)
Southern Ontario Planning Region

Population Centres	All Jurisdictions ¹	Provincial Facilities ²
	Opportunities Per Capita	Opportunities Per Capita
Windsor	1.6	0.24
Chatham	3.3	0.54
Sarnia	3.5	0.62
London	2.6	0.38
St. Thomas	5.1	0.73
Woodstock	5.3	0.76
Stratford	5.3	0.90
Owen Sound	5.3	1.00
Guelph	5.0	0.71
Kitchener	3.3	0.47
Brantford	4.7	0.65
Simcoe	4.4	0.66
Niagara	2.2	0.23
Hamilton	2.5	0.35
Oakville	3.5	0.55
Brampton	3.2	0.55
Toronto	1.2	0.22
Barrie	4.3	1.00
Oshawa	3.7	0.72
Peterborough	5.1	1.00
Belleville	4.8	1.00
Kingston	3.8	1.00
Cornwall	4.3	1.00
Ottawa	2.0	0.71
Pembroke	5.3	1.00
Average	2.7	0.5

¹Federal, Provincial, Regional, Municipal, Private Commercial.

²Provincial facilities and areas only.

Source: Ministry of Natural Resources, Determination of Outdoor Recreation Supply Targets for the Provincial Parks System in Southern Ontario, 1976.

Table 24

Supply Ratios for Publicly Provided Hunting and Fishing Opportunities
3 Hour Travel Zones of 7 Major Centres

Population Centre	Hunting Supply Ratio ¹	Fishing Supply Ratio ¹
Windsor	.78	.92
London	1.70	3.80
Kitchener-Waterloo	2.47	2.52
Toronto-Hamilton	.75	.53
Peterborough	5.79	3.49
Kingston	3.14	1.82
Ottawa	1.70	.82
Southern Ontario Planning Region	1.12	.94

¹The supply ratio is the number of user days of supply available per user day of participation.

Source: Ontario Parks Integration Board Study, 1972.

b) Recreation Facilities and Areas

In the following sections, some attributes of the current supply and use of outdoor recreation opportunities are briefly presented. In some instances, notably public lands not managed primarily for recreation, and private lands, the

review is restricted because of the limited information available. Tables 25 and 26 show the relative supply of opportunities for camping and bathing provided by jurisdiction.

The section concludes with a brief discussion of several dispersed recreation activities (trail activities, angling, hunting) in which the Ministry is actually involved but which occur largely outside of established recreation areas.

i) Designated Public Areas

This section discusses public lands under active management by federal, provincial and regional agencies to provide public outdoor recreation opportunities (Map 33). Excluded are the predominantly urban oriented recreational opportunities provided by municipalities, because of a lack of summary data.

National Parks and National Historic Parks

The federal government, through Parks Canada, Department of Indian and Northern Affairs, manages three National Parks and five National Historic Parks in Southern Ontario. Primary

emphasis in the federal program involving these areas is the preservation of nationally significant natural or cultural features, rather than the need for public recreation opportunities.

The three National Parks in Southern Ontario comprise an area of approximately 8,384 acres¹ (3,396 hectares). Total visitation to these three areas during the 1973 operating season was 746,000 (Table 27), which included approximately 46,000 occasions of camping.² The five National Historic Parks in operation during 1973 attracted 342,000 visitors during the operating season.³

¹ Pelee, Georgian Bay Islands, St. Lawrence National Parks

² 1972 figures, Parks-Canada

³ Bellevue House, Woodside, Fort George, Fort Malden, Fort Wellington

Table 25

Relative Supply of Camping Opportunities by Jurisdiction
Southern Ontario Planning Region

Administrative Region	Total No. Campsite	Percentage of Campsites by Jurisdiction				
		Federal	Provincial	Regional	Municipal	Private Commercial
Algonquin	15,690	1	30	0	1	68
Central	30,885	0	10	9	6	75
Eastern	15,916	1	35	1	5	58
Southwestern	26,429	0	18	9	7	66
Southern Ontario Planning Region ¹	88,920	0	20	6	5	68

¹Percentage values rounded to the nearest whole number.

Source: Outdoor Recreation Supply Inventory

Table 26

Relative Supply of Bathing Opportunities by Jurisdiction
Southern Ontario Planning Region

Administrative Region	Total No. Opportunities	Percentage of Campsites by Jurisdiction				
		Federal	Provincial	Regional	Municipal	Private Commercial
Algonquin	580	3	39	1	54	3
Central	10,680	0	33	17	36	14
Eastern	2,024	1	85	2	11	1
Southwestern	7,323	6	33	7	49	5
Southern Ontario Planning Region ¹	20,607	2	39	12	39	9

¹Percentage values rounded to the nearest whole number.

Source: Outdoor Recreation Supply Inventory

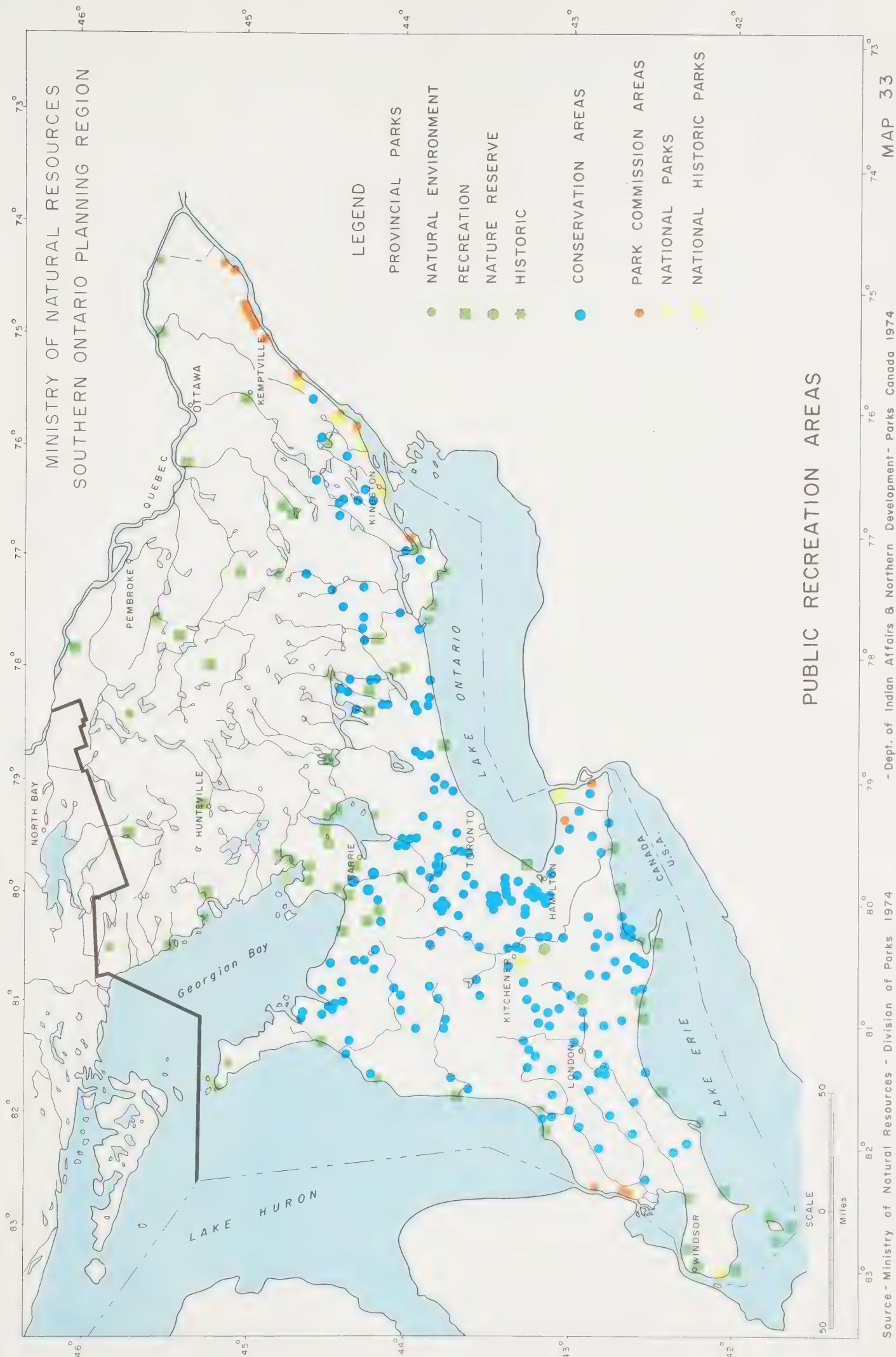
Provincial Parks and Parks Commissions

Provincial parks and parks operated by the three parks commissions comprise a major segment of publicly provided outdoor recreation opportunities in Southern Ontario.¹ However, they comprise only a portion of the total supply (Tables 25 and 26).

In 1976, acreage in the 66 provincial parks in Southern Ontario totalled nearly 1.97 million acres (0.80 million hectares). These areas vary considerably in terms of the types of recreational opportunities offered and accessibility to the population. The forty-three Recreation Parks in Southern Ontario, comprising 20,218 acres (8,813 hectares), are managed to provide for a variety of intensive and moderately intensive recreation activities (e.g. swimming, picnicking) easily accessible to population centres for day and overnight visits. The seventeen Natural Environment Parks total 1.95 million acres (0.79 million hectares) and are managed to provide for a wide variety of moderate to low intensity recreational experiences oriented

1

Niagara Parks Commission, St. Clair Parkway Commission, St. Lawrence Parks Commission



toward the natural surroundings.

There are presently 6 Nature Reserve Parks in Southern Ontario and natural zones have been designated in a number of the provincial parks. The objective is to preserve representative and unique natural areas while providing for non-destructive recreational, scientific and educational uses for these areas.

Total recorded visits to provincial parks in the Planning Region reached almost 10 million in 1973 (Table 27). It is apparent that the most intensive use is in the Central Administrative Region where close to 2.25 million visits occurred in only 4,279 acres (1,733 hectares). The Southwestern Region is next highest in intensity of use, followed by the Eastern Region. In the Algonquin Region, if Algonquin Park is excluded, the intensity of visitation is only slightly lower than the Eastern Region.

Use of provincial parks included almost 2.5 million camper days. The Algonquin Region led in terms of use although its capacity was

Table 27

Public Recreation Land¹
Southern Ontario Planning Region

Administrative Regions	National Parks		Provincial Parks		Parks Commissions		Conservation Authorities	
	Acres (ha)	Visitation 000's	Acres (ha)	Visitation 000's	Acres (ha)	Visitation 000's	Acres (ha)	Visitation 000's
Algonquin	3,520 (1,426)	136	1,875,207 (759,459)	1,853	-	-	-	-
Central	-	-	4,279 (1,733)	2,241	2,800 (1,134)	2,783	40,907 (16,567)	2,789
Eastern	1,024 (415)	226	26,924 (10,904)	1,760	7,200 (2,916)	2,969	5,054 (2,047)	37
Southwestern	3,840 (1,555)	384	24,025 (9,730)	3,611	214 (87)	86	17,057 (6,908)	815
Southern Ontario Planning Region	8,384 (3,346)	746	1,930,435 (781,826)	9,465	10,214 (4,137)	5,838	63,018 (25,522)	3,641

¹The datum year 1973 is used for comparison purposes. Areas are currently greater for some categories.

Sources: Parks Canada, 1973 records of visitation.
Ontario Provincial Parks Statistical Report, 1973.
Conservation Authorities Branch, 1973.

slightly less than the Southwestern Region. The Central and Eastern Region ranked below the Southwestern Region in capacity and total use of camp sites.

The three parks commissions in Southern Ontario manage a total of 10,200 acres (4,131 hectares) for recreational use (Table 27). In 1973, recorded visits to these lands¹ reached an estimated 5.8 million. Camping capacity on these lands was approximately 2,600 sites in 1972, just over 3 percent of the supply in Southern Ontario.

Use of provincial park campgrounds in Southern Ontario has increased at an average annual rate of approximately 8 percent in recent years. Expansion in supply of camping opportunities, however, has averaged only in the order of 4 percent annually (Figure 2). For

1

Visitation figures here consist of counts of traffic flow estimates for each facility operated. Consequently, day visitors to the Commissions' area may be counted several times during the course of their visits.

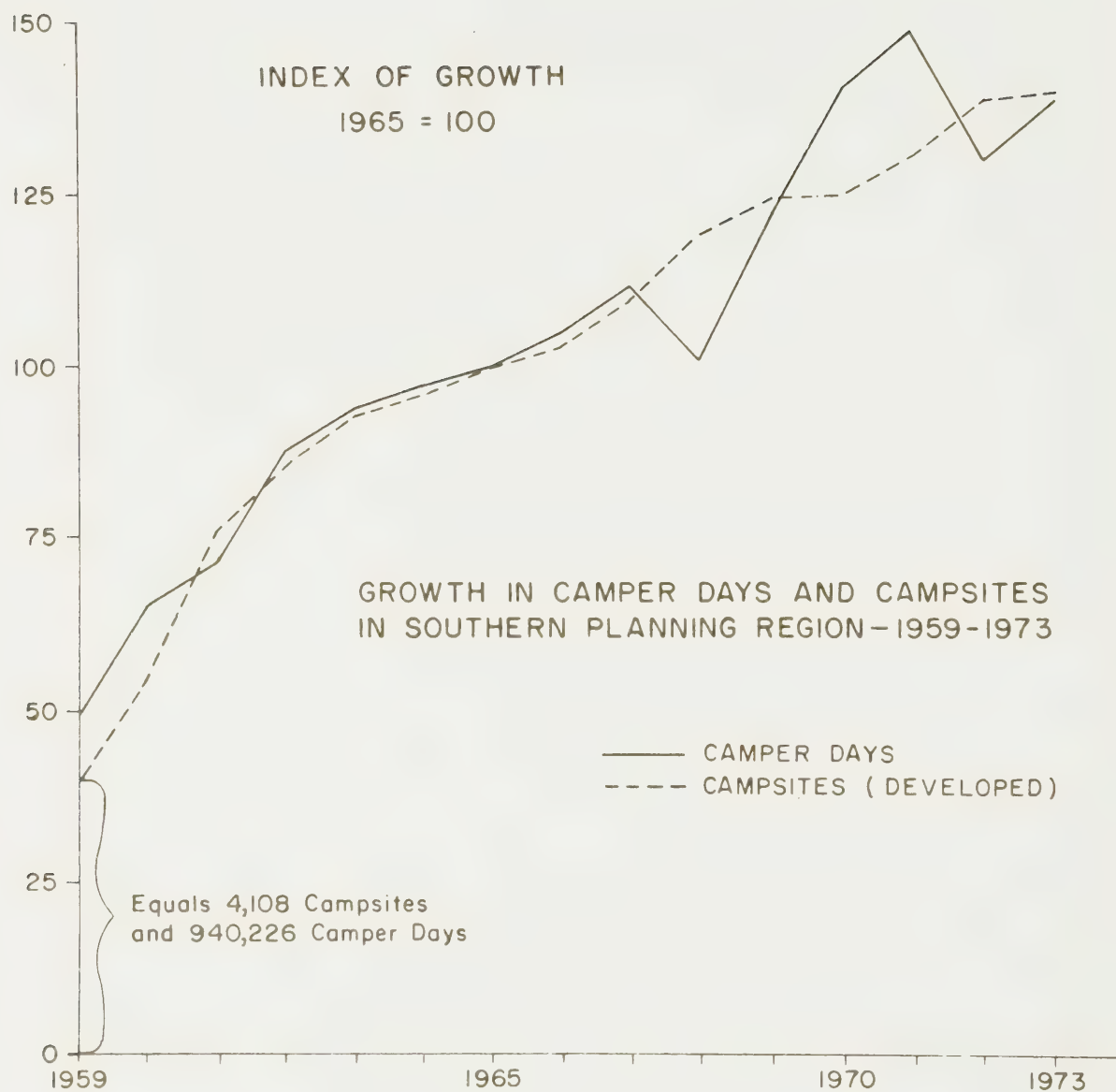


FIG. 2

1973, adopting a capacity standard desirable¹ for sustained use¹, campground use in the provincial parks comprise an estimated 96¹ percent of available capacity. During peak-use years, as well as in high demand areas within Southern Ontario, this capacity² has been outstripped by use.

Conservation Authority Areas

The conservation authorities in Southern Ontario currently operate 319 areas totalling over 86,000 acres (34,830 hectares) generally close to large urban areas. Visitation to such areas is over 3.6 million (Table 27). Since a sizable number of conservation areas do not record visits, the total visitation to conservation areas in Southern Ontario Region is undoubtedly higher than that indicated above. Recreational opportunities provided on these lands are largely of a day-use nature frequently including some provision

1

The capacity standard applied here is based on 60 percent occupancy of campsites during July and August, the peak months.

2

For example, in the Algonquin Region, campground use currently exceeds this capacity.

for water-oriented activities.

Conservation areas also provide a limited amount of camping capacity in Southern Ontario, approximately 3,800 sites in 1972, representing 5 percent of estimated supply.

Provincial Fishing Areas - Provincial fishing areas are small areas of public land developed and operated to provide day-use recreational fishing for substantial numbers of Ontario residents. These areas are easily accessible to large population centres. Development may occur in conjunction with other Ministry facilities, such as provincial parks and tree nurseries.

A high level of development and intensive management characterize provincial fishing areas. The fishing waters are usually man-made ponds or small natural lakes with a high capacity for shore anglers. Most areas are stocked with rainbow trout and/or brook trout, on a "put and take" basis. The numbers of fish and the time of stocking are manipulated to spread the catch among users.

Map 34 shows the location of the twelve provincial fishing areas in Southern Ontario. The estimated recreational use which these areas support is outlined in Table 28.

Provincial Wildlife Management Areas -

Twenty-five Provincial Wildlife Management Areas are distributed across Southern Ontario (including five in provincial parks). They are open year round for a variety of activities which may include wildlife viewing and hiking. Hunting is permitted during open seasons; however, restrictions on the number of hunters may be applied to ensure an uncrowded and possibly more successful hunt.

Fifteen Wildlife Extension Landowner Agreement Areas are managed for hunting under agreements between landowners and the Ministry. The areas are located in Southern Ontario where the need for day-use hunting and wildlife viewing is most acute.

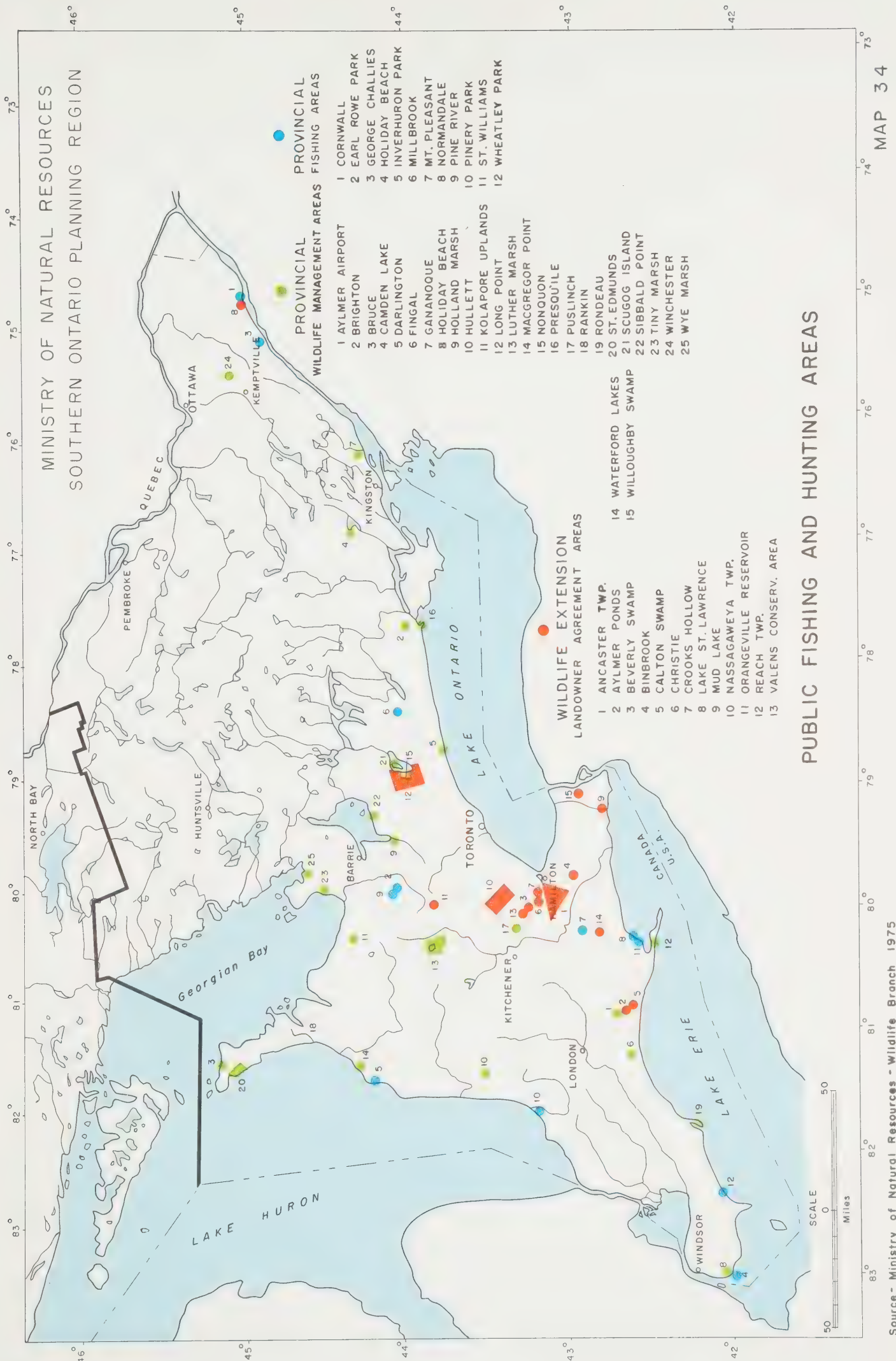
Landowners in agreement areas receive assistance for wildlife management. In return, they allow public access to the wildlife resources on their property. Map 34

Table 28

Estimated Use of Provincial Fishing Areas, 1972
Southern Ontario Planning Region

Provincial Fishing Area	Number of Angler Visits	Number of Hours of Fishing
Cornwall	5,800	17,000
Earl Rowe Park	6,800	16,300
George Challies	2,300	4,900
Holiday Beach	8,000	14,000
Inverhuron Park	5,000	12,500
Millbrook	1,200	3,300
Mt. Pleasant	40,500*	101,300*
Normandale	3,800	16,300
Pine River	9,500	22,000
Pinery Park	2,000	3,500
St. Williams	5,200	20,700
Wheatley Park	4,000	7,000
Total	94,100	238,800

*Figures for Mt. Pleasant are 1971 estimates. Although 1972 user estimates are not available, use was equal to, or greater than 1971 levels.



shows the location of the two types of public hunting areas in Southern Ontario.

ii) Other Public Areas

In addition to the lands specifically designated and managed for recreational purposes, discussed in the previous section, other public lands in the Planning Region currently provide, or are capable of providing, additional recreational opportunities (Map 35). These lands are dealt with briefly below. Few estimates have been made regarding the nature and extent of the recreational opportunities provided on these lands or their current recreational use.

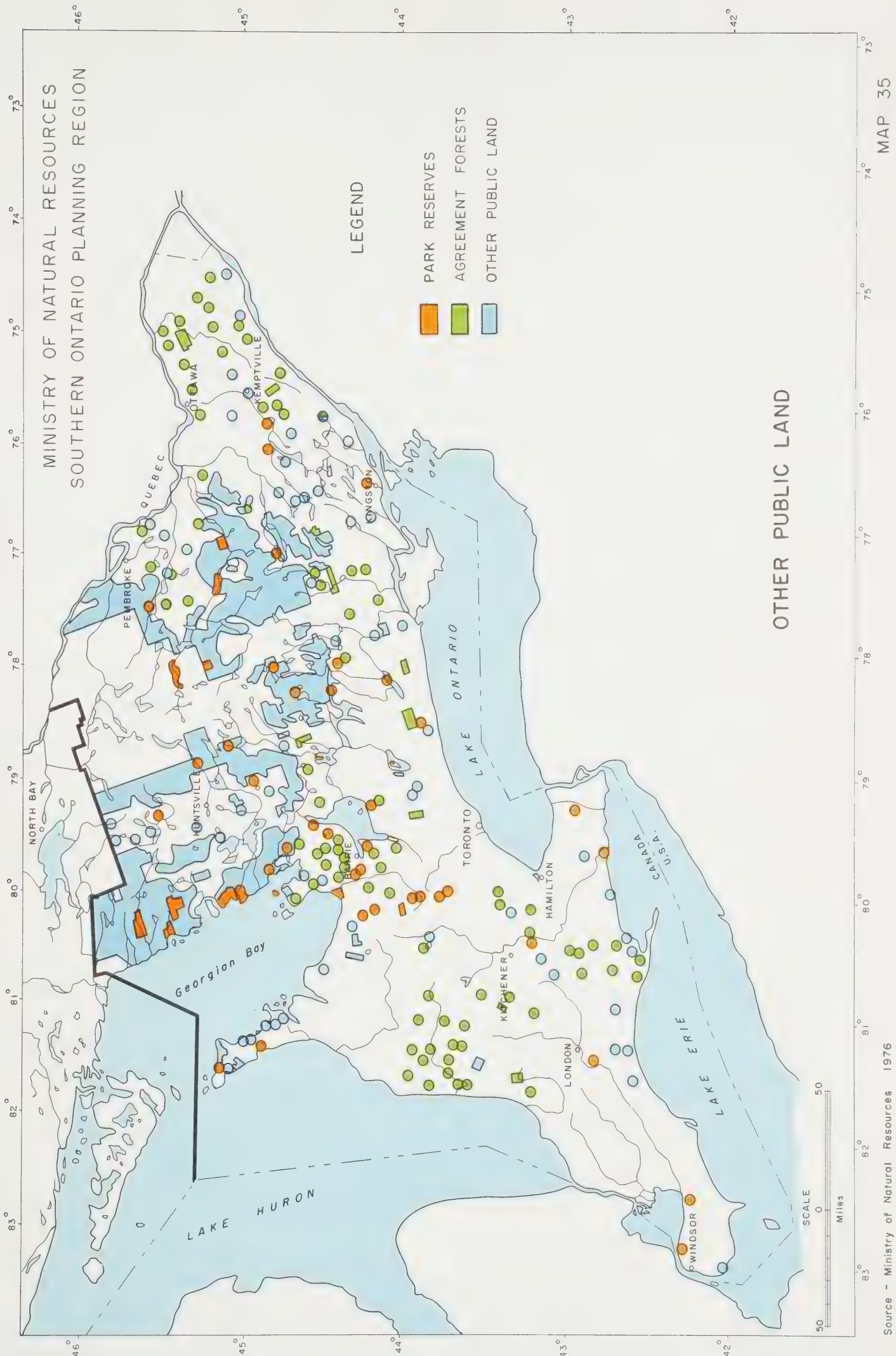
Agreement Forests - Within Southern Ontario, the Ministry of Natural Resources manages approximately 255,000 acres (103,275 hectares) of agreement forests. Depending on the ownership of particular properties, a variety of consumptive and non-consumptive recreation opportunities are permitted through a series of individual forest agreements. At present, individual forest areas are providing

recreation opportunities such as hunting, snowshoeing, hiking, horseback riding and snowmobiling.

Park and Recreation Reserves - Public lands held as park and recreation reserves by the Ministry of Natural Resources in Southern Ontario totalled in excess of 200,000 acres (81,000 hectares) in 1974. These areas have been acquired to assist in meeting the future long-range recreational needs of Ontario residents.

The bulk of the reserve acreage is comprised of provincial park reserves which in 1974 included 75 areas comprising some 160,000 acres (64,800 hectares). This acreage is distributed unevenly within Southern Ontario, with approximately two-thirds of the acreage located in the Algonquin Administrative Region. Generally, recreation on park reserves is unrestricted.

A program initialed in 1971 to establish a system of recreation areas along the Niagara Escarpment had resulted in the acquisition



of about 70,000 acres (28,350 hectares) as of December 1974. Of this total, close to 30,000 acres (12,150 hectares) consist of provincial park reserves and have been included in the reserve acreage noted above. These Escarpment reserves make up over one-half of the provincial park reserve acreage in the Southwestern and Central Administrative Regions. The remaining 40,000 acres (16,200 hectares) acquired under the Escarpment program comprises either developed recreational areas or reserves held by the conservation authorities.

Another recreational land acquisition program underway in Southern Ontario involves the Canada-Ontario-Rideau-Trent-Severn corridor. This joint Federal-Provincial initiative arose out of a study begun in 1967 concerning the recreational potential of the 425 mile corridor, stretching from Ottawa to Georgian Bay. Approximately 20,000 acres (8,100 hectares) of public recreation land have been set aside along the corridor, comprising both developed provincial parks

and park reserves. These reserves are included in the total provincial park acreage noted above.

Crown Land and Access Points - There are nearly 4 million acres (1.7 million hectares) of Crown land in Southern Ontario, exclusive of provincial parks. Approximately 600 official access points to Crown land and water are managed by the Ministry of Natural Resources for recreational use. Over one-half of these access points are located in the Algonquin Administrative Region, while less than 10 percent are located in the Central and South-western Regions combined. There is considerable variation in the facilities provided at these access points. Some access points provide facilities for boat launching and car/trailer parking. Others also provide swimming and picnicking facilities. Generally, however, the serviced land base and developed facilities are quite limited and opportunities are largely confined to day-use recreation.

The importance of Crown land and Crown land access points is apparent in the Algonquin Region where 2.2 million camper days occur annually on Crown land as compared to 900,000¹ camper days in provincial parks.

In addition to the access points on Crown land waterfront programs being implemented by conservation authorities particularly in the Toronto-Hamilton area are providing both access and variety of boating and fishing opportunities to a large segment of the population of Southern Ontario.

iii) Private Lands

The Ontario Recreation Survey has documented the importance of the private sector in providing outdoor recreation opportunities. For example, approximately 44 percent of the participation of Ontario residents in swimming on a day-use basis takes place at private facilities (33 percent at non-commercial

1

Hough, Stansbury and Associates, Crown Land Recreation Study, preliminary report for Ontario Ministry of Natural Resources, 1976.

private facilities, i.e. cottages, home pools, and 11 percent at commercial private establishments²). For motor boating, roughly 26 percent of day-use participation and 60 percent of extended (non day-use) participation takes place from private facilities.

Despite the significance of the private sector in providing recreation opportunities in Southern Ontario, information about the supply and use of private facilities is, in many cases, sketchy and incomplete. The Outdoor Recreation Supply Inventory currently being carried out under the Tourism and Outdoor Recreation Planning Study Committee will provide much information about the dimensions of the private sector. Two areas of the private sector which have been surveyed to some extent, commercial campgrounds and cottaging, are discussed in the following section. Also briefly mentioned are specialized private facilities for angling and hunting.

2

Tourism and Outdoor Recreation Planning Study Committee, Ontario Recreation Survey: Progress Report No. 2, Parliament Buildings, Toronto.

Although detailed information is lacking for other recreational activities, private land does provide a base for many extensive activities such as hiking and wildlife viewing.

Changing perception and attitudes are creating serious problems in the area of public access to private land. On highly attractive lands in the vicinity of urban centres, up to 65 percent of the land (by township) is posted against public use. Therefore, at a time when the demand for recreational opportunities is increasing, the supply of opportunities for outdoor recreational activities is being curtailed on private land.

Commercial Campgrounds - It is estimated that commercial campgrounds comprised approximately two-thirds of the camping

capacity in Southern Ontario in 1972 (roughly 49,000 campsites)¹. Based on a sampling of commercial campgrounds, these campsites were estimated to have accommodated between 7 and 8 million camper days in 1972.

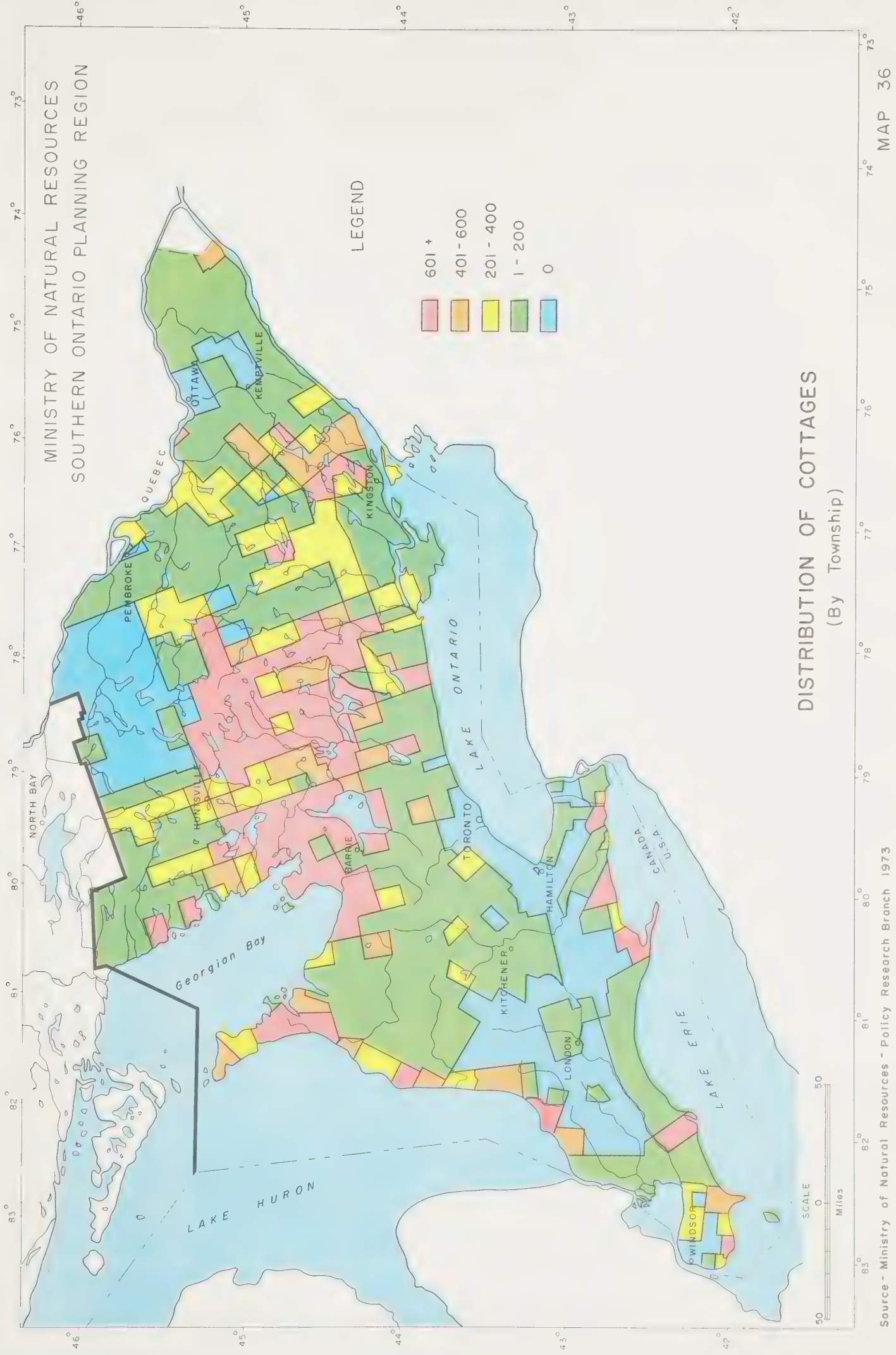
Relative to publicly provided camping opportunities, the commercial sector is most dominant in the Central Administration Region.

Results of the Ontario Recreation Survey suggest that the above estimates of the commercial camping sector may be rather high. It was found, for example, that approximately 45 percent of the camping participation of Ontario residents took place at provincial and regional campground facilities. Regardless of which estimate is adopted, it is evident that Southern Ontario's commercial camping sector is at least equal in importance to the public sector in terms of capacity and use.

Cottaging - Cottaging has been a traditional recreational activity in Ontario. There are now about 157,000 cottages in Southern Ontario. This represents over 60 percent of all cottages

1

Ontario Ministry of Industry and Tourism, Analysis of Camping in Ontario, 1972, Parliament Buildings, Toronto. This figure may be overestimated because criteria for defining what constitutes a "campsite" were not specified in the survey.



in Ontario. At an average user rate of 300 days of cottaging annually, cottages in the Planning Region would provide about 47.2 million user days annually.

Annual expenditures by owners are over 850 dollars per cottage to a total of 171 million dollars excluding boat expenses.¹ Cottage spending represents a major transfer of funds from urban to rural areas. Improvements to cottages are reflected in increased taxes to local municipalities. An intangible benefit is that Ontario cottagers would spend elsewhere if not attracted to their present locations within the Province.

Cottaging is concentrated in the Precambrian Shield, around large inland lakes, and along the Great Lakes shoreline. The general distribution of cottages is shown on Map 36.

About 13 percent of the cottages are owned by Americans who spend about 18 percent of the total cottaging expenditure in Ontario or about 37 million dollars. Non-resident

1

Analysis of Ontario Cottage Survey, Travel Research Report No. 55, Department of Tourism and Information, 1971.

ownership is concentrated on Lake Erie in Essex county and the Haldimand-Norfolk-Niagara area and is also significant in parts of Georgian Bay and Muskoka.

Commercial Fishing Ponds and Fishing Preserves - Water bodies located on or adjacent to private lands make a substantial contribution to the supply of sport fishing opportunities in Southern Ontario.

A private landowner without a special licence, may charge anglers a rod fee for the privilege of fishing on his property.

A fishing preserve is a licenced artificial pond in which angling is not governed by the regulations concerning seasons and catch limits. Fishing preserves must be contained completely within privately owned land and owners must keep a record of angling activity and the numbers and species of fish caught. There were 44 fishing preserves in Southern Ontario in 1974.

iv) Dispersed Activities

Little reference has been made to activities taking place over extensive land areas which may not be reserved exclusively to provide recreational opportunities. Several of these types of activities are discussed below.

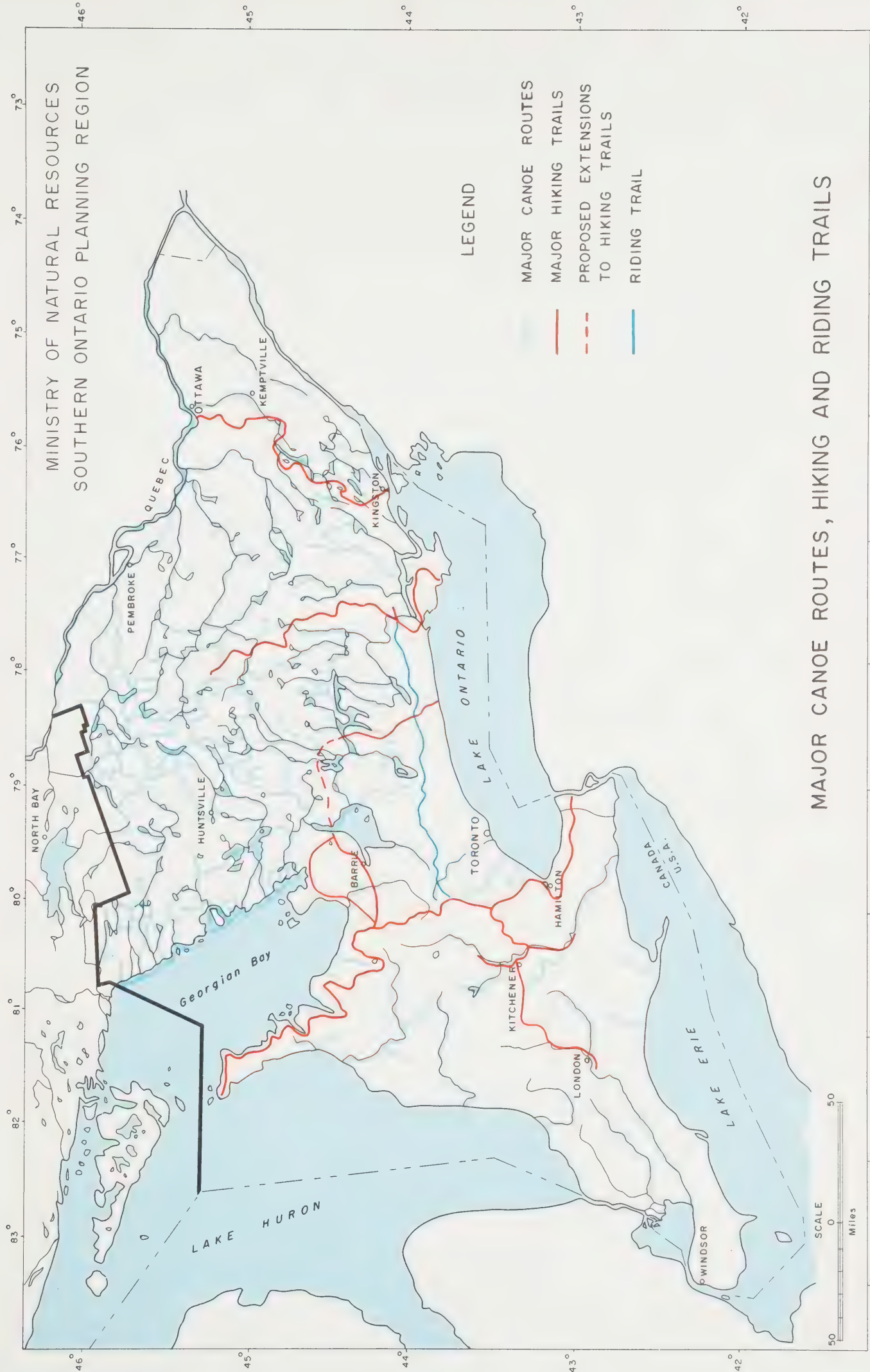
Trails - Many forms of outdoor recreation utilize linear corridors. To date, most trails in Southern Ontario have been developed and managed on private and public lands by groups of citizens having common recreational interests. The extent of present trail development is not known for all activities, and is complicated by multiple use of trails and by difficulties in defining what constitutes a trail.

Established canoe trails or routes in Southern Ontario are concentrated in the Precambrian Shield with major routes following historical pathways (Map 37). Over 3000 miles (4827 kilometres) of routes are advertised by the Ministry of Natural Resources, but many more,

possibly another 4000 miles (6436 kilometres) exist within Southern Ontario.

The Ministry of Natural Resources and other public agencies manage a large number of hiking trails within parks and on other public lands in Southern Ontario. However, the bulk of the hiking trail mileage, approximately 1100 miles (1770 kilometres), has been developed and maintained by trail clubs (Map 37). For the most part, club-sponsored trails cross both public and private lands under various forms of agreement with landowners. For example, approximately 50 percent of the Bruce Trail crosses private lands, with the remainder divided almost equally between roads (including road allowances) and other public lands.

Southern Ontario snowmobile trails are maintained by various government agencies, private resorts and snowmobile clubs. At least 4500 miles (7240 kilometres) of such trails are known to exist in Southern Ontario. Some 2200 miles (3540 kilometres) of trails are operated



MINISTRY OF NATURAL RESOURCES
SOUTHERN ONTARIO PLANNING REGION

LEGEND

- MAJOR CANOE ROUTES
- MAJOR HIKING TRAILS
- PROPOSED EXTENSIONS TO HIKING TRAILS
- RIDING TRAIL

MAJOR CANOE ROUTES, HIKING AND RIDING TRAILS

on public lands by the Ministry of Natural Resources with the balance of the mileage maintained by private clubs under an interim trails maintenance program which the Ministry has offered over the past few winter seasons.

While opportunities for other trail activities including horseback riding, cross-country skiing and motorcycle trail riding exist within Southern Ontario, inventories of these types of trail activities are incomplete. One major exception is the Great Pine Ridge Trail which has been developed by equestrians and stretches the length at the Oak Ridges Moraine.

A provincial program to establish an extensive network of recreational trails has been initiated recently through the Ministry of Natural Resources. This purpose of the program is to provide improved opportunities for a wide variety of trail activities through better management and co-ordination of existing trail facilities and through the development

of new trails. The initial stages of this program are currently underway with major policy recommendations slated to go before the Government in 1977.

Sport Fishing - In 1970, there were 2.4 million anglers fishing in Ontario and angling provided 40.8 million user-days of recreation. Table 29 shows the amount of angling enjoyed by the residents of Southern Ontario and the relative amount of angling supplied by the four southern administrative regions. Residents of Southern Ontario account for 81 percent of the Province's resident angling. The Planning Region supplies 70 percent of the resident angling in the Province. The Central Administrative Region is faced with the most severe deficit of angling opportunities. While almost half of the angling in the province is carried out by fishermen from the region, the region supplies only one-quarter of the province's resident angling.

Forty-one percent of the non-resident angling in Ontario occurs in the southern part of the

Table 29

Percentage of Provincial Sport fishing
Supplied and Consumed by
Southern Ontario Planning Region

Administrative Region	Resident Angling		Non-Resident Angling
	% Supplied	% Consumed	% Supplied
Algonquin	17	5	9
Eastern	13	13	16
Central	25	49	10
Southwestern	15	14	6
Southern Ontario Planning Region	70	81	41

Source: 1970 Angler Survey, Sport Fisheries Branch

Table 30

Sport Fishing Participation
by Administrative Region

Administrative Region	Millions of user-days per annum	Percentage by Residents of Region Supplying Angling	Percentage by Other Ontario Residents	Percentage by Non-residents of Ontario
Algonquin	6.7	19	74	7
Eastern	5.5	62	22	16
Central	9.5	88	6	6
Southwestern	5.7	63	31	6
Southern Ontario Planning Region	27.4	61	31	8

¹ Based on the results of the Ontario Recreation Survey, the estimated participation in angling in Southern Ontario residents over 12 years of age was 22.9 million occasions in 1975 as compared to the 1970 Angler Survey estimate for all residents of 25.1 million occasions in Southern Ontario.

Source: 1970 Angler Survey, Sport Fisheries Branch

province. The average expenditure by non-resident anglers in Southern Ontario is approximately twenty dollars per user-day. In 1970, non-resident fishermen spent in excess of 40 million dollars in the Planning Region.

The relative participation in angling, by place of angler residence is indicated in Table 30. The Central Administrative Region caters almost exclusively to residents of that Region. In the Algonquin Administrative Region, most of the angling supplied is enjoyed by Ontario fishermen resident outside the region. Of the four southern administrative regions, the Eastern Administrative Region hosts the largest proportion of non-resident fishermen.

The principal sport fisheries of Southern Ontario, in terms of the number of angling opportunities provided, are shown on Map 38 and Table 31. Collectively, these water bodies account for 13.5 million user-days. These waters supply approximately one-third of the total angling provided by the Province.



MINISTRY OF NATURAL RESOURCES
SOUTHERN ONTARIO PLANNING REGION

PRINCIPAL SPORT FISHERIES
(Those fisheries supplying over 400,000 user days)

Table 31

Principal Sport Fisheries¹
Southern Ontario Planning Region

Fishery	Approx. Number of Occasions, 1970
Kawartha Lakes	1,970,000
Eastern Georgian Bay (incl. Midland Bay)	1,560,000
Southern Georgian Bay	1,300,000
Rice Lake and Trent River	1,190,000
Haliburton Highlands	1,040,000
Lake Simcoe - Couchiching	900,000
Muskoka Lakes	890,000
Saugeen River	740,000
Rideau Lakes	640,000
Bay of Quinte	630,000
Thousand Islands	620,000
Lake St. Clair	560,000
Long Point Bay	540,000
Upper Niagara River	520,000
Lake Scugog	470,000
Total	13,570,000

¹Only those fisheries providing at least 400,000 occasions of angling are listed.

Source: 1970 Angler Survey, Sport Fisheries Branch

Winter fishing accounts for about 10 percent of the total angling in Southern Ontario.

Wildlife - Wildlife is important as the base for hunting and viewing activities. In Southern Ontario 13.5 percent of the population participates specifically in viewing or photographing wild animals, and 9.4 percent hunt (small game 7 percent, waterfowl 3 percent, and big game 3 percent of hunters).

Viewing has not been actively encouraged on an organized basis, except in a few areas such as Upper Canada Village and Wye Marsh. A large portion of the demand for viewing is expressed in that part of Ontario south of the Precambrian Shield which is primarily in private land ownership. Demand is greatest in the urban areas. Although the participation rate appears to have levelled off, increases will likely occur with increases in population.

About 72 percent of Ontario hunting occurs in Southern Ontario as shown in Table 32. Most of the 3.3 million recreation occasions

are associated with small game hunting but approximately 350,000 days of deer and moose hunting are provided, primarily on the Shield.

Table 32

Present Participation in Hunting
by Administrative Region

Administration Region	Occasions Per Annum
Algonquin	730,000
Central	1,000,000
Eastern	760,000
Southwestern	820,000
Southern Ontario Planning Region	3,310,000

Source: Wildlife Branch, 1975

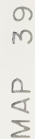
A large part of the demand for hunting opportunities is expressed in the area south of the Precambrian Shield on private land while only 6 percent of this activity takes place on public facilities. The highest small game hunter densities are in Niagara, Essex, Waterloo, York, Ontario, Brant and Halton counties, while most days are spent in

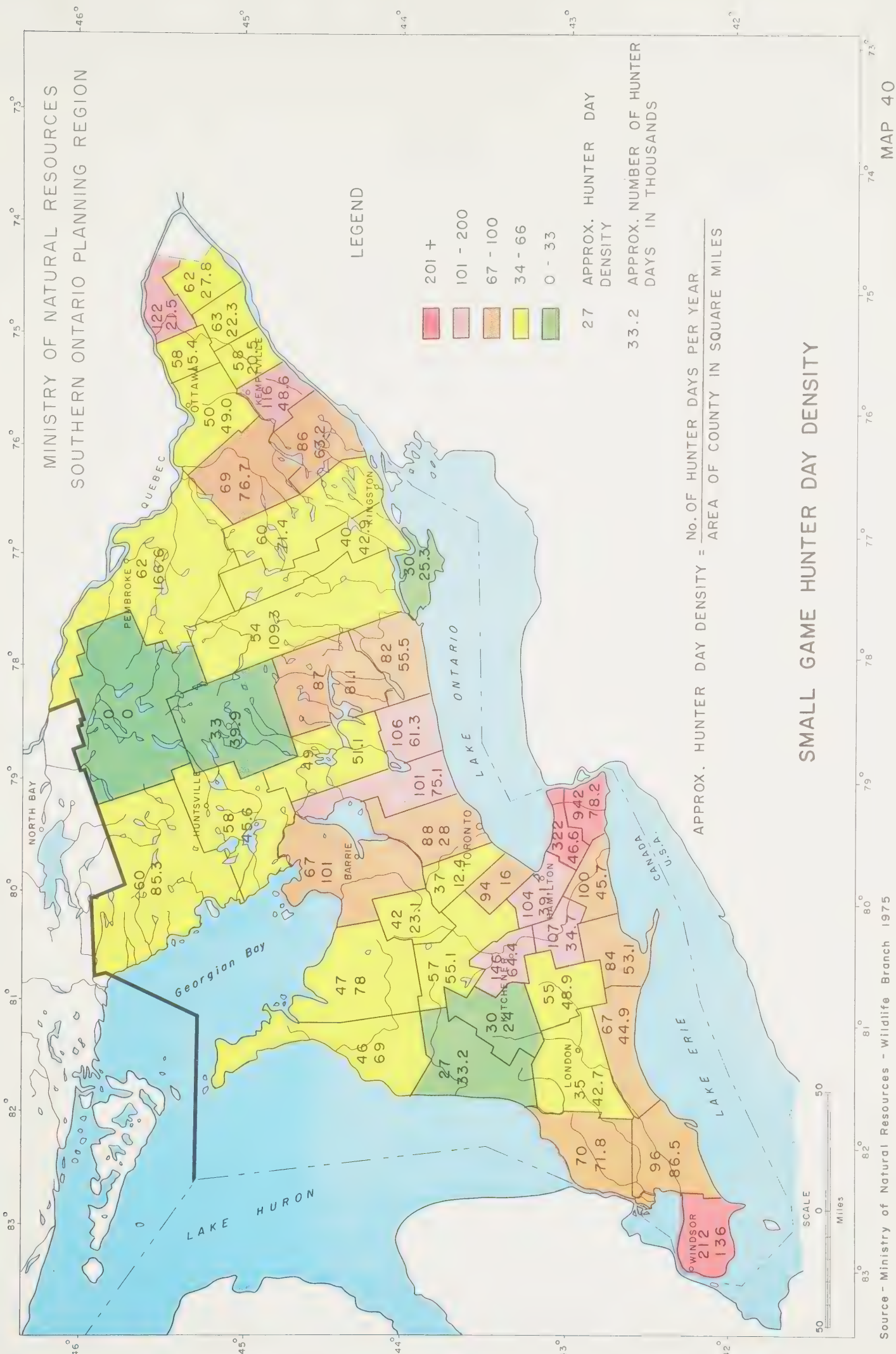
Niagara, Essex, Waterloo, Ontario, Brant, Wentworth, Haldimand, Durham, Grenville and Prescott.

Participation in small game hunting has remained fairly constant in recent years. Participation is constrained primarily by a lack of high quality recreation opportunities close to home. Participation in big game hunting is increasing, particularly moose hunting.

Total direct expenditures by hunters on their sport is annually about 31 million dollars in Southern Ontario. Non-resident participation in hunting is generally low except for some waterfowl hunting in southwestern Ontario.

In the section under resource evaluation (Chapter IV. 4) it was indicated that the supply of wildlife-oriented recreation is being curtailed by changing land use and ownership patterns in the vicinity of urban complexes. As a result, recreationists are forced to travel further for wildlife hunting and viewing opportunities.





Map 39, which shows the percentage of hunter participation in their county of residence indicates the lower rate of local hunting activity near urban centres. It is assumed that to a large degree a similar situation occurs among the people who wish to view wildlife in its natural setting.

On Map 40, days of small game hunting are presented as an example of the expressed demand for wildlife recreational opportunities in Southern Ontario. The actual number of hunter days in each county are noted and expressed as the density of hunters days per square mile on a county area basis.

6. Agricultural Production

Southern Ontario is by far the most important agricultural area in the Province, having over 90 percent of its agricultural activity (Table 33). Map 41 shows the dominant place of agriculture in resource use in all but the Algonquin Administrative Region, and illustrates the heavy concentration in some parts of the southwest.

Table 33

Selected Agricultural Statistics by Administrative Region

	Algonquin	% ¹	Central	% ¹	Eastern	% ¹	Southwestern	% ¹	Planning Region	Ontario	% ²
Census Farms No. Area (000's acres)	371.5 880.1	4 6	31333 4399	35 30	16745 3433.1	18 23	39029 5989.7	43 41	90822 14702.0	94722 15963.0	95 92
Commercial Farms No. (gross income \$5000 +) Area (000's acres)	1599 517.0	2 4	20743 3563.7	33 30	10421 2556.8	16 21	31041 5429.9	49 45	63804 12067.4	65667 12882.0	97 94
Farm Population (000's)	13.6	4	131.8	34	70.5	19	157.2	43	375.5	391.7	96
Farm Capitalization (\$ millions) For Commercial Farms	107.1	1	2800.0	42	933.5	14	2902.3	43	6743.4	6897.5	98
Gross Value of Farm Products Sold by Commercial Farms (\$ millions)	16.2	1	421.5	33	165.1	13	692.3	53	1295.1	1372.9	94
Improved Farmland (000,000 acres) 1941 1951 1966 1971	.6 .5 .4 .3	5 4 3 3	4.3 4.0 3.6 3.2	34 34 32 31	2.6 2.5 2.3 2.0	21 21 20 19	5.1 4.9 5.0 4.8	40 41 44 47	12.6 11.9 11.4 10.3	13.4 12.7 12.0 10.9	94 94 95 94
% Change of Improved Farmland 1941-71 1951-71 1966-71	-50 -40 -25		-26 -20 -11		-23 -20 -13		-6 -2 -4		-18 -14 -10	-19 -14 -9	

¹Percentage the Administrative Region value is of the Planning Region

²Percentage the Planning Region value is of the Province

Source: 1971 Census of Canada - Agriculture (Catalogue 96-707)
Ministry of Agriculture and Food, Agriculture Statistics (various years)

In 1971, Southern Ontario contained 90,822 census farms, totalling 14.7 million acres (6.0 million hectares),¹ or 48 percent of its land area. Of these, 63,804 farms, totalling 12.9 million acres (5.2 million hectares), reported gross incomes of 5,000 dollars or more.

The farm population of 375,000 is about 5 percent of the total for Southern Ontario although this figure represents 96 percent of the provincial farm total. Seventy-seven percent of Southern Ontario's farming population is situated in the Southwestern and Central Administrative Regions. Farmers and farm workers together totalled an estimated 226,000 in 1971 and constitute a relatively small occupational category, and their proportion of the total is decreasing. However, the multiplier factor, including people in farm-related businesses, would more than double this employment figure.

The intensity of agricultural development reflects to a considerable degree the land capability, either for

1

A census farm was defined as a farm, ranch, or other agricultural holding of one acre or more with annual sales of agricultural products of 50 dollars or more.

general farming or for special crops such as potatoes, apples and soft fruits, and tobacco, except where urban expansion, rural residential development, and speculative holdings have taken large areas of land out of production.

Farm capitalization for land, buildings and equipment totalled over 6.7 billion dollars in 1971, while farm sales totalled nearly 1.3 billion dollars, or 98 and 94 percent, respectively, of the provincial total. Approximately 85 percent of these values are concentrated in the Southwestern and Central Administrative Regions.

These, and other statistics presented in Table 33 further underline the overwhelming importance of Southern Ontario for agriculture in Ontario.

Livestock, livestock products and dairy products accounted for 71 percent of the 1971 farm cash receipts in Southern Ontario. Dairy and beef areas are both important in the York-Peel and Brant-Waterloo-Wellington areas. Eastern Ontario is very largely a **dairying** area, as is Oxford county in Southwestern Ontario. Bruce and Perth counties are important beef cattle areas. Southern Ontario produces about 99 percent of the provincial total of livestock and dairy products.

Fruits and vegetables are grown primarily in the Niagara area, Georgian Bay and the Brighton-Prince Edward area. Vegetable production is concentrated in the Holland, Thedford, Rondeau and Mersea marshes. The fruit and vegetable production is over 99 percent of the provincial total for these products, and represents 6 percent of farm cash receipts for Southern Ontario.

Tobacco production is concentrated in Elgin, Norfolk and Middlesex counties with lesser concentrations in Brant and Oxford. It is the most valuable single cash crop in Ontario and requires major inputs including a considerable seasonal labour force.

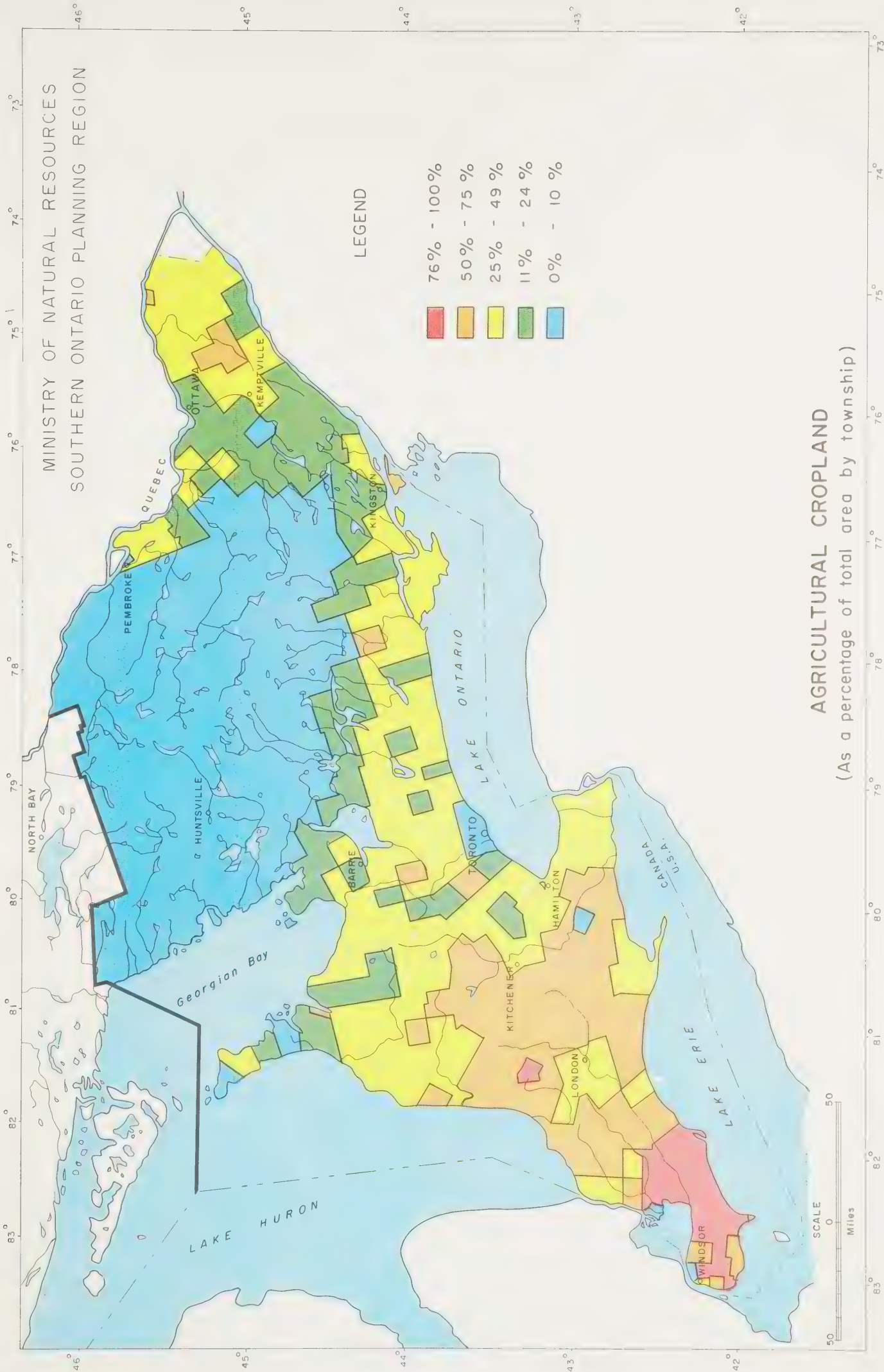
Viable farming is threatened by the spread of urban development, rural residential development and an increase in speculative land investment with the result that increasing numbers of people must be supported by a shrinking agricultural land base.

To a large extent, the forces mentioned above have taken place on the better agricultural land. During the past thirty years, there has been a considerable reduction in improved farmland (Table 33). From 1941 to 1971, improved farmland within Southern Ontario declined over

18 percent from 12.6 million acres to 10.3 million acres (5.1 million hectares to 4.1 million hectares). The acceleration of this trend is illustrated by the fact that 48 percent of this decline occurred between 1966 and 1971. At the same time, there has been a substantial withdrawal from agricultural use of lands with marginal capability. The offsetting effect of some new land being broken for agricultural use is negligible.

These trends, combined with a rising population have reduced the land under agriculture from 3.5 to 1.4 acres (1.4 to 0.5 hectares) per capita between 1941 and 1971. This is a serious matter when it is generally agreed that 1.8 acres (0.7 hectares) per capita is needed to sustain a population at North American standards.

Many non-agricultural activities, of direct interest to the Ministry of Natural Resources, may be carried on in complete harmony with the dominant agricultural use of Southern Ontario to yield substantial benefits to both the farming community and to others. These include woodlot and shelterbelt management, fish and wildlife management, regulated use of pits, quarries and other mining operations, and a variety of extensive outdoor recreation activities.



MINISTRY OF NATURAL RESOURCES
SOUTHERN ONTARIO PLANNING REGION

AGRICULTURAL CROPLAND
(As a percentage of total area by township)

7. Water

Water is an essential resource. It is derived both from surface and ground water sources. A most important characteristic of water is the interdependence of its uses within any given watershed, basin or aquifer. Each waterbody is unique, and each use applied to a waterbody requires different quality and quantity standards.

Many water uses are compatible, but many others are not. Water is used as a commodity for domestic, industrial and irrigation purposes. It is used to carry and dilute waste. To provide some idea of scale, municipal use of water from Lakes Ontario and Erie was 369 million gallons (1,677 million litres) per day during the 1960's. Waterbodies also provide fisheries habitat, transportation routes for commerce, and opportunities for recreation. Water is a source of energy for electrical generation, with hundreds of thousands of cubic feet per second being diverted from natural courses for this purpose.

Shores of waterbodies are used very extensively for a variety of uses including cottaging, lodging, public recreation, industry and commerce, and wildlife management.

streams, rivers and lakes have been greatly altered by these and other activities in and around them. One of the more significant influences has been the installation of large numbers of dams of various types and purposes, including power generation, flood control, commerce, and recreation.

In Southern Ontario, there are approximately 300 dams maintained by the Ministry of Natural Resources and conservation authorities.¹ This is a very small number compared, for example, to the 235 private dams in the regional municipality of Durham, and the 2,500 or more² within Southern Ontario. There are very few headwater streams which have not been dammed, creating a barrier to migrating fish during spawning periods.

The positive benefits of strategically located dams, diversions and channelizations include flood control benefits for the protection of lives and property.

1

Engineering Services Branch and Conservation Authorities Branch.

2

Lindsay District Report, 1974, and Department of Lands and Forests Report on Private Dam Construction, 1972.

Erosion control, stream flow augmentation, irrigation, transportation, recreation and other benefits justify many of the man-made structures on lakes and rivers within Southern Ontario.

Also of concern, is the degree and variety of pollution which occurs. Water pollutants may be grouped in three categories, degradable, non-degradable, and persistent.

Degradable pollutants include human, animal, and plant wastes, a wide variety of household cleaning agents, agricultural fertilizers, industrial chemicals and refuse.

The non-degradable pollutants include those materials which undergo no great changes after they enter the waterbody. These include dust, sand, metallic salts and some acids.

The persistent pollutants contain the largest and most rapidly growing variety of substances including the very numerous exotic synthetics produced by the chemical industry for example, pesticides, herbicides and petroleum derivatives.

The effects of water pollution are diverse and pervasive and can be discussed in three main areas: health, ecology and property. Polluted waters from human or

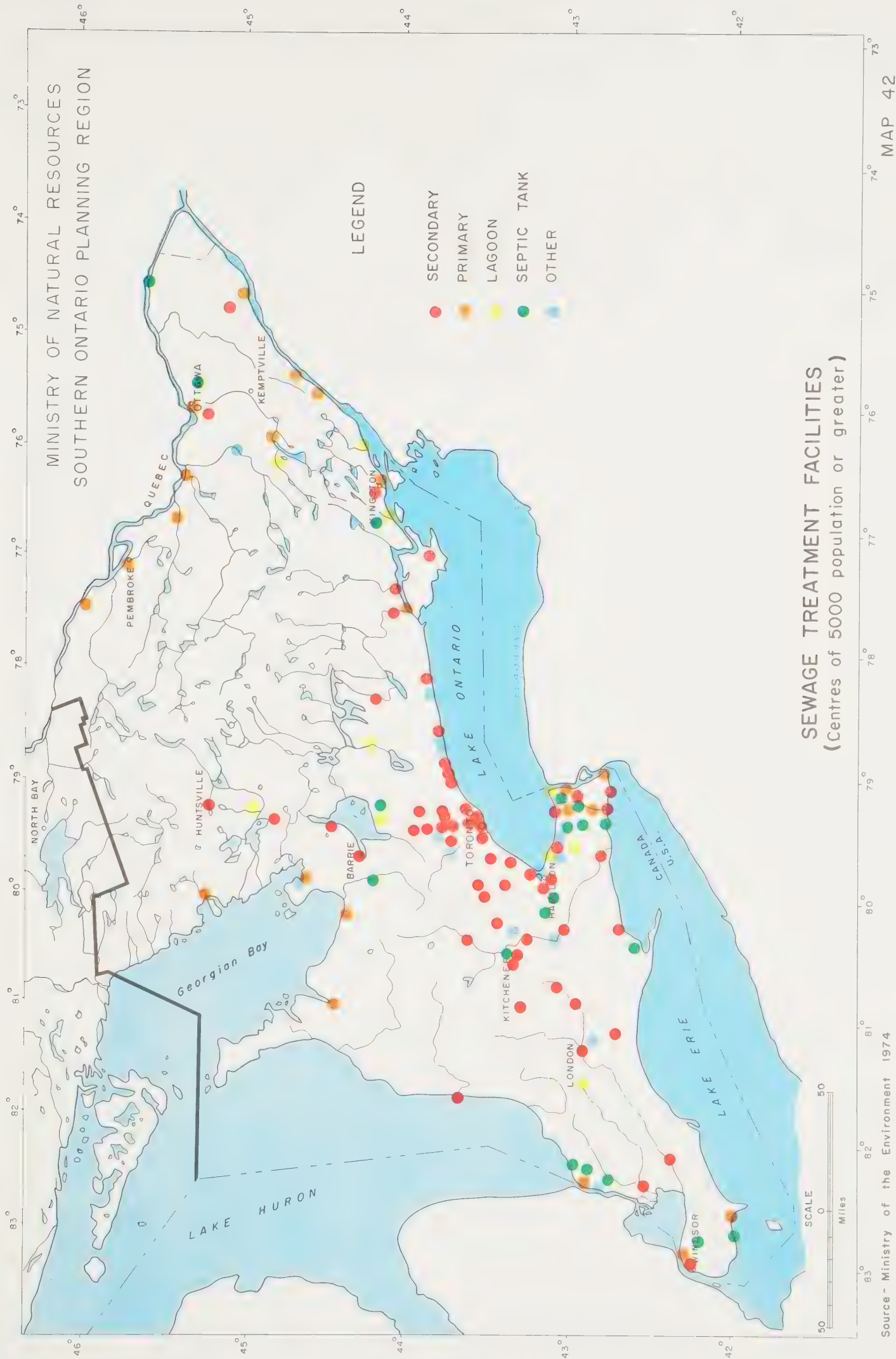
animal sewerage can cause certain diseases such as infectious hepatitis. Defective septic systems can promote similar problems when effluent enters a waterbody which is used for bathing or is the source of potable water. Viruses have been discovered in effluents from tertiary sewage treatment plants. Health authorities are also concerned about the effects of radioactive elements and biocides.

In Southern Ontario, the degree of pollution is related to the population and the land use activities of the area. Lake Ontario and Lake Erie have high degrees of pollution from domestic, agricultural, and industrial sources. Deterioration of water quality in the Precambrian Shield is most often attributed to a lack of proper residential and cottage sewage treatment facilities.

Map 42 indicates the type of sewage treatment facilities available in centres with a population of 5,000 or more people.

The most obvious effect of water pollution is the accelerated rate of eutrophication of our waterways.¹ Thermal

¹ Eutrophication, in simple terms, is an aging process occurring in all lakes involving the progression through various stages of succession of a water body from open water to marsh and ultimately to dry land.



pollution resulting from electric generating stations, river diversions, channelizations and the construction of dams, accelerates and aggravates the process of eutrophication and can disrupt ecological systems.

8. Land Tenure and Degree of Development

Southern Ontario is, in total, the most highly developed area in the Province. It has a relatively small proportion of the surface area, 17 percent, but 90 percent of the population and the major share of Ontario's economic activity. Eighty-five percent of distributed electrical energy and over 95 percent of housing construction activity occurs in Southern Ontario. Most of the privately owned land is also located here.

Furthermore, this development is largely concentrated in the Great Lakes Lowlands, with a lesser amount in the Ottawa-St. Lawrence Lowlands, and comparatively little in the Precambrian Shield. In terms of development intensity the administrative regions are, in order, Central, Southwestern, Eastern and Algonquin.

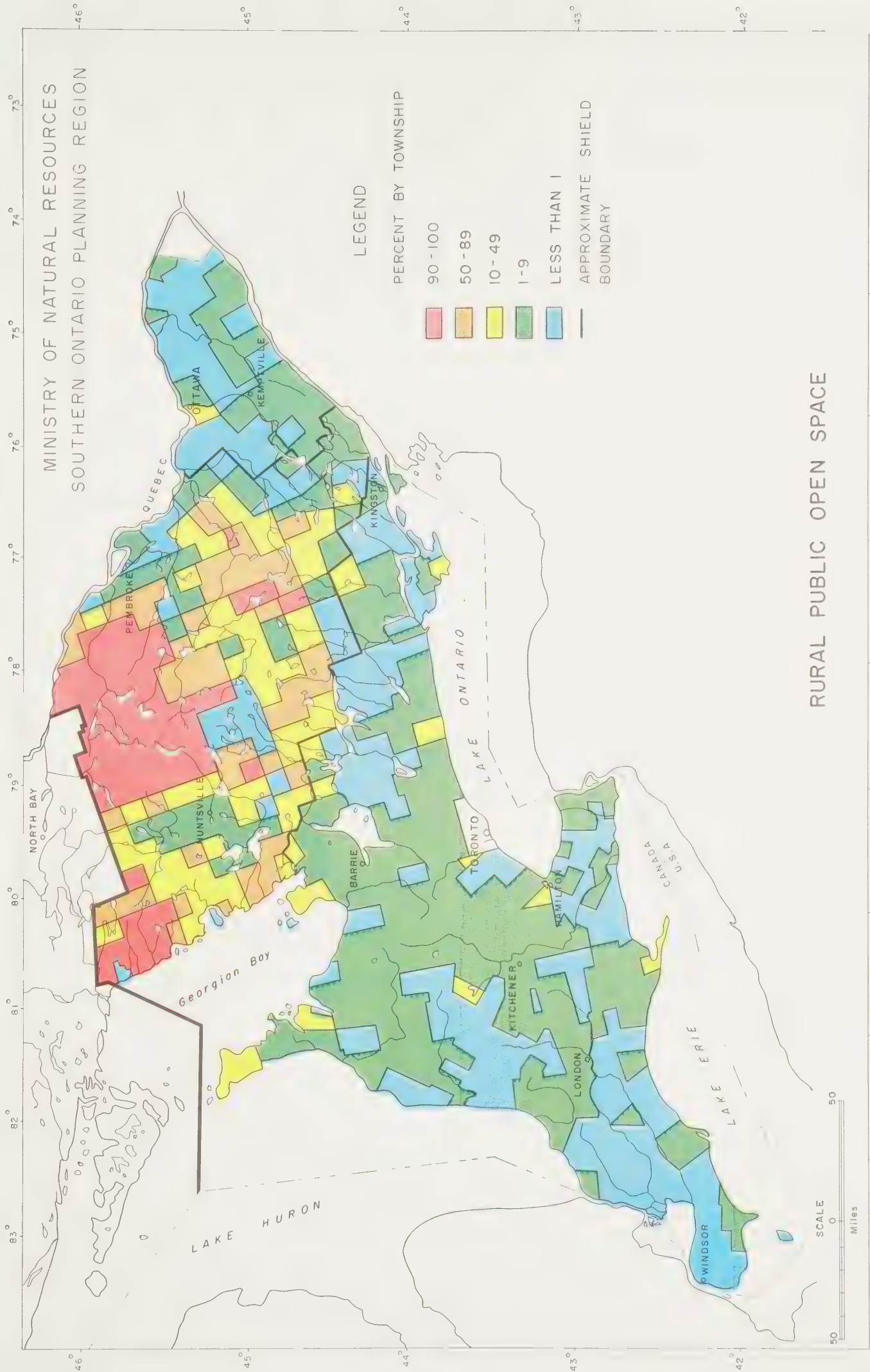
While a high degree of development may indicate economic vitality, it also poses serious problems for future resource allocation and management, since the pattern of

land tenure renders cumbersome any desired changes in direction and emphasis in land use. It may be frustrated or made prohibitively expensive by the presence of structures. Also, land prices tend to be driven up by competition, including that generated by speculative land buying.

a) Public Open Space

Rural public open space for this purpose includes Crown land, provincial parks, conservation areas and agreement forests. Road allowances were not included in the calculations.

Most of the land in Southern Ontario is in private ownership though the beds of most waterbodies are publicly owned. However, significant variation is evident from one part of Southern Ontario to another. In the southern portion, the percentage of public land is very low while the reverse is the case in the northern portion of Southern Ontario. Map 43 shows the percentage of rural land in public ownership in very generalized categories.



Parts of Southern Ontario with especially low amounts of public land are Essex, Kent, Lambton, Perth and Huron counties, the Niagara Peninsula, and eastern Ontario. Areas with conspicuously high percentages of public land are north of Parry Sound, Algonquin Park, and parts of the counties of Lennox, Hastings, and Frontenac.

Open space within urban areas, although not readily mapped at a broad regional scale, is equally important to the recreational and aesthetic needs of the population. Efforts made to provide the desired open space within urban centres and near-urban areas give rise to development conflicts, exert pressures on limited natural resources, and generate very expensive projects.

b) Degree of Development

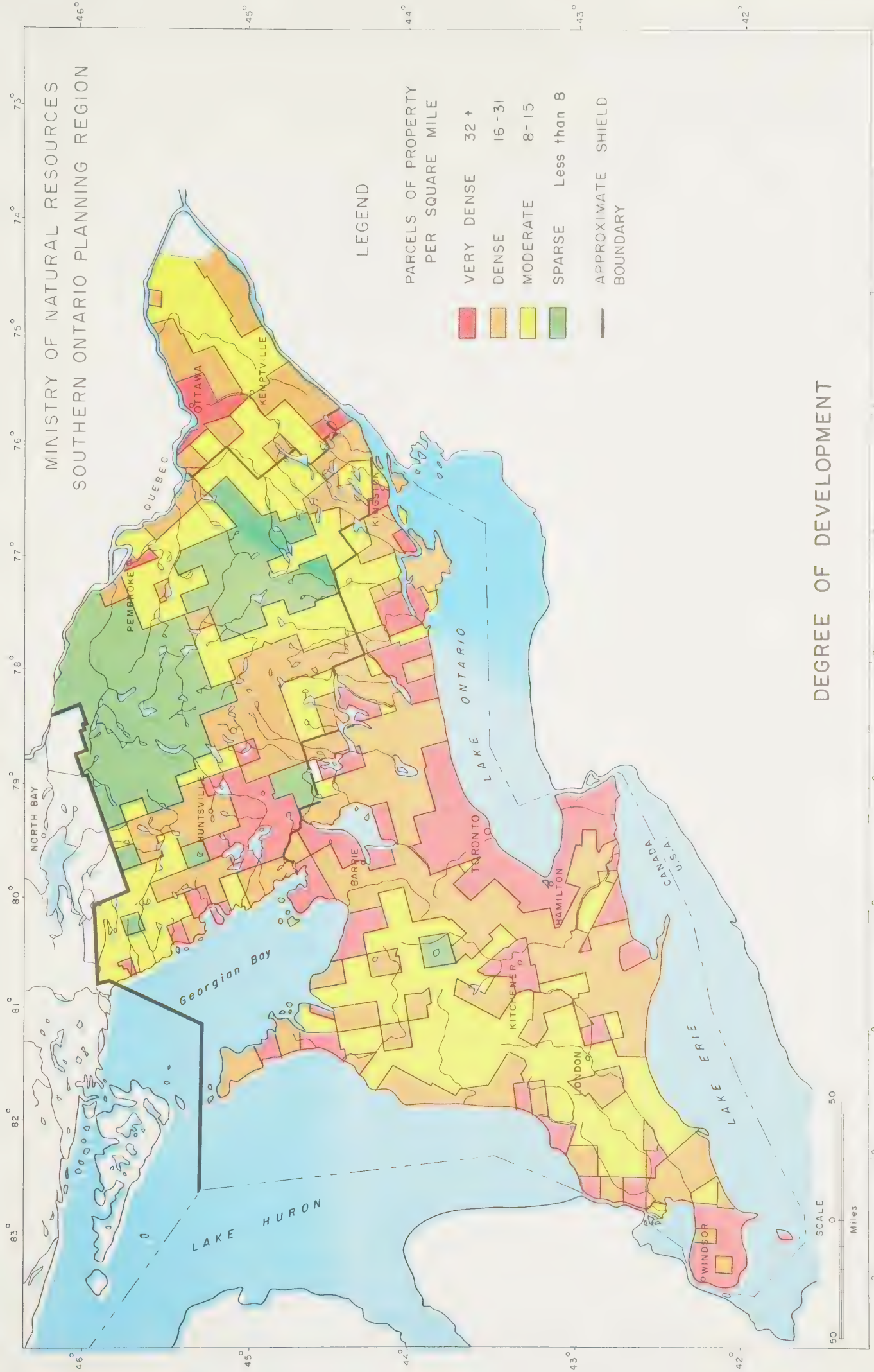
Ministry of Revenue assessment data, arranged on a township basis, have been used to derive useful measures of development.

The total number of all non-urban properties was assembled for Southern Ontario to portray a broad picture of degree of development. This assumes, of course, that property divisions ultimately lead to some form of development.

Map 44 shows the number of properties per square mile. Urban areas, of course, may have many times these numbers of properties per square mile. The City of Toronto, for instance averages 5000 residential properties alone in a square mile.

This map must be used in conjunction with other data for application in land use planning. For example, the number of properties per square mile associated with a particular category of development is the same throughout Southern Ontario. However, the landscape and the kind of use associated with a particular development class would vary from one part of the region to another.

In the southern portion of Southern Ontario, an average farm landscape would have a moderate



MINISTRY OF NATURAL RESOURCES
SOUTHERN ONTARIO PLANNING REGION

LEGEND

PARCELS OF PROPERTY PER SQUARE MILE	
VERY DENSE	32 +
DENSE	16 - 31
MODERATE	8 - 15
SPARSE	Less than 8
APPROXIMATE SHIELD	
BOUNDARY	

DEGREE OF DEVELOPMENT

degree of development. On the Precambrian Shield, in all probability, cottages would reflect the same level of development.

Areas of sparse development are of particular interest to the Ministry of Natural Resources due to their potential for both resource production and outdoor recreation. The proximity of undeveloped open space to large populations is likewise an important consideration.

In the Precambrian Shield several large areas of sparse development occur. These are: Algonquin Park and certain adjacent townships, parts of Renfrew, Lennox and Addington and Frontenac counties, parts of the Parry Sound Territorial District, and the townships of Dalton, Digby and Londford. The only conspicuous area of sparse development outside the Shield is in the Luther Marsh area.

VI. Other Plans

A number of provincial and other agencies, including most of the operating divisions of the Ministry of Natural Resources have developed or progressed towards plans for their specific responsibilities. It is necessary to recognize these plans and to indicate how the Ministry of Natural Resources Strategic Land Use Plan will relate to them.

1. Other Ministry of Natural Resources Plans

It is assumed that all plans of the Ministry of Natural Resources that require the use of land will conform to the co-ordinated program strategy or strategic land use plan. This would apply quite obviously to all such plans that are prepared subsequent to the completion of the strategies. The precise course of action for each of the various existing Ministry plans will only be clear as the Strategic Land Use Plan develops.

a) Division of Fish and Wildlife

Fisheries Management Plans - A strategic plan for the fisheries of Ontario has been the subject of a joint federal-provincial study, which will offer direction to management plans in Ontario for the sport and commercial fisheries.

Within Southern Ontario the Ministry hopes to prepare management plans for stream systems; at the moment it attaches higher priority to those stream systems outside the Precambrian Shield. To date two plans have been prepared, though not yet approved, for Bronte Creek and Lucknow River.

In addition, plans are also to be undertaken for each of the Great Lakes. To date, there has been a strong commitment to such a plan for Lake Erie.

Wildlife Management - Work is in progress to divide Southern Ontario into wildlife management units for planning purposes based on ecological considerations.

Forty Wildlife Management Areas and Extension Agreement Areas have been established in the Region. Plans have been prepared for the Hullet and St. Lawrence Wildlife Management Areas.

b) Division of Forests

Forest Management Plans for Crown Units - There are eleven forest management units in Southern Ontario with a total area exceeding 12 million

acres (5 million hectares). These units involve nearly all of the Crown land in Southern Ontario, including Algonquin Park. In the case of Algonquin Park a forest management plan is being prepared by the Algonquin Forest Authority. For the other 10 Management Units, plans have been prepared by the Division of Forests.

The purpose of forest management plans is to translate forest policy and objectives into specific treatments for a particular forest area. While the primary purpose of the plan may be related to wood production other interests and uses, such as recreation, are also taken into account.

Forest Management Plans for Agreement Forests - Agreement forests are managed by the Ministry of Natural Resources but owned primarily by municipalities and conservation authorities. There are 60 such forest areas in Ontario, 33 with approved management plans. Most of these forests are south of the Precambrian Shield. The total area of all agreement forests is 254,784 acres (103,188 hectares).

Private Forest Lands - Privately owned forest lands are essential to achieving the Ministry's objectives of long-term wood production. Agreements made under the Woodlands Improvement Act to some extent address the management of private lands for timber production.

c) Division of Lands

North Georgian Bay Recreational Reserve - A general land use plan for the Reserve was approved in 1971 and is now under review. The plan indicates the maximum degree of development and the kind of use that should be permitted for the various parts of the Reserve. The Reserve is a multiple use area where recreation is the dominant use and where a variety of other uses are permitted.

The plan has served as a guideline for development. In particular, the Eastern Georgian Bay Interim Development Control Plan applies development restrictions along part of the Georgian Bay shoreline .

Lake Development Studies - Studies of the suitability and feasibility of providing Crown land cottaging opportunities are being carried

out by the Ministry in the northern part of Southern Ontario. Priority is being given in these studies to those lakes which appear to have the maximum potential for cottaging.

Great Lakes Recreation Access Studies - Studies have been carried out by the Ministry to guide the provision of government assistance for the development of water-oriented recreation opportunities along the Great Lakes shoreline within Southern Ontario.

d) Division of Mines

The Division of Mines, largely through the Geological Branch, carries out and publishes geological, geophysical and geochemical surveys and research in order to identify the relationships between known mineral deposits and their geological environments and to predict favourable environments where further discoveries might be made. This permits development of guidelines for mineral exploration and preparation of mineral potential maps which can be used as input for land use planning.

e) Division of Parks

Park Master Plans - Master Plans have been approved for two of the provincial parks in Southern Ontario, Bronte Creek and Algonquin. Master plans have been prepared but not yet approved for 25 parks. For the remaining 40 parks in Southern Ontario a plan will be prepared.

Park Master Plans establish detailed policy guidelines for each provincial park for long term preservation, development and management.

Park Systems Plan - A draft provincial parks policy is under review and is expected to form the basis of a parks systems plan for Ontario.

f) Parks Commissions

A plan has been prepared for each of the three Parks Commissions to guide the acquisition and development of properties.

g) Leslie M. Frost Natural Resources Centre

An integrated resource use plan is under preparation to demonstrate multiple use of land at the centre.

2. Plans of Other Agencies

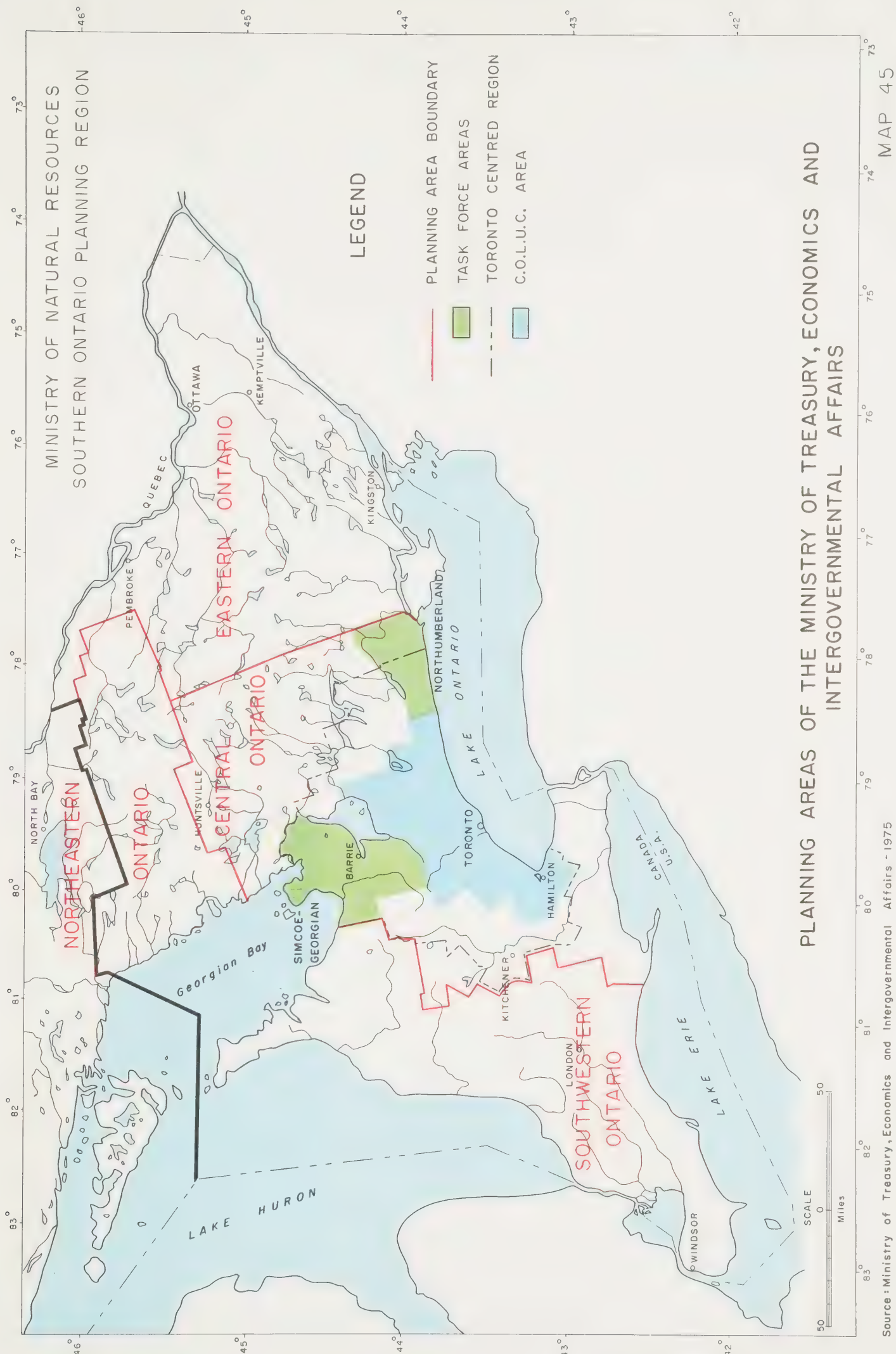
The Ministry of Natural Resources has no direct control over the plans of other agencies. Therefore the strategic plan will either have to conform to other agencies plans or form the basis for a change in the other plans. Indeed a major benefit of the co-ordinated program strategy will be the consolidation of the Ministry of Natural Resources position on land use for inputs to other plans.

It is assumed that most negotiations between the Ministry and other agencies will be worked out on an informal basis.

a) Ministry of Treasury, Economics & Intergovernmental Affairs

This Ministry has set out provincial goals for an overall strategy designed to maintain or enhance the quality of life through the Design for Development Program. The regional planning areas of Treasury, Economics and Intergovernmental Affairs are shown on Map 45.

The broad aims of provincial planning are: the correction of specific problems, protection and



wise use of natural resources, sound planning for population distribution, the encouragement of private enterprise and improvement of the effectiveness of provincial services.

A list of recently published or pending Design for Development planning documents for Southern Ontario is:

- Ontario Future Trends and Options - March 1976
- A Strategy for Ontario Farmland - March 1976
- Toronto Centred Region Program Statement - March 1976
- Northeastern Ontario: A Proposed Planning and Development Strategy - March 1976
- Eastern Ontario: A Proposed Planning and Development Strategy - pending
- Renfrew County Development Strategy - March 1976
- Simcoe-Georgian Area Development Strategy- February 1976
- The Durham Sub-region Development Strategy- March 1976
- Northumberland Area Development Strategy - December 1975

The Ministry of Treasury, Economics and Inter-governmental Affairs advises on local government restructuring, and thus has set the stage for the recent formation of Regional Municipalities

and restructured counties and districts. This Ministry also administers the Planning and Development Act, under which areas can be designated for provincial planning which is binding on municipalities.

Parkway Belt East and West - The Parkway Belt System is a major structural element of the Toronto Centred Region concept that serves as a multi-purpose utility corridor, urban separator and linked open space system. Parkway Belt West affects four regional municipalities (Hamilton-Westworth, Halton, Peel, York) Metropolitan Toronto and cities and towns within the regional boundaries. A Draft Plan for the Parkway Belt West was published in January 1976. Parkway Belt East is still in the early planning stages.

b) Municipal Official Plans and the Ministry of
Housing

Under the Planning Act, municipalities are required to prepare appropriate studies and make plans to ensure the health, welfare, safety and convenience of present and future inhabitants.

Municipal planning is supported, guided, and facilitated by the Ministry of Housing, with due consultation with concerned agencies, including the Ministry of Natural Resources. Completed plans are reviewed for conformity with the Planning Act and with provincial policies. Upon approval by the Minister of Housing they become the Official Plan of the municipality. Municipalities, therefore, play a key role in shaping the future of Southern Ontario.

Where official plans are approved it will normally be assumed that the Ministry of Natural Resources plan will conform. In some cases it may be that official plans conflict with Ministry of Natural Resources concerns. In such cases the possibility of taking steps leading to official plan revisions must be considered.

c) Ministry of Agriculture and Food

The report A Strategy for Ontario Farmland, dated March 1976 outlines several possible means to prevent the loss of prime agricultural land and to maintain a viable agricultural industry in Ontario.

Local plans of municipalities have been identified as the chief means of land use control. Compensation is suggested for municipalities which shift development from better lands to lower class lands. A guideline will be prepared to assist municipalities in planning for ongoing agriculture and a detailed review of all competing land use demands will be undertaken.

The report recognizes the importance of agriculture to Ontario and suggests that good planning of all uses could result in the saving of more than 97 percent of the Class 1, 2, 3 and 4 land in Ontario for agriculture.

d) Ministry of Transportation & Communications

In the past this Ministry has produced a variety of area studies which have culminated in rather precise locations for additional new roads. More recently the approach is to prepare comprehensive studies to establish a transportation policy for the various regions. In Southern Ontario south of the Precambrian Shield, it is policy to connect all population centres of 5,000 or more by Kings Highways. On the Shield, a similar policy has

been established for centres of 2,000 or more.

Map 46 indicates a proposed system of the highway linkages to the year 1985. Routes between Ottawa and Mattawa, Ottawa and Kingston, Toronto and Peterborough, Sarnia and London, St. Catharines to Welland and north from Orillia will become divided four lane limited access highways.

e) Ministry of Energy

This Ministry makes studies and recommendations to ensure a continuing adequate and sure supply of all types of energy. Position papers on various fuel types have been prepared.

Major pipeline corridors are indicated on Map 47.

f) Ontario Hydro

Through the Ministry of Energy, Ontario Hydro is responsible for the adequate supply of electrical energy, and is undergoing rapid expansion to meet growing demand. Several new generating facilities are required by 1993 in Southern Ontario and a 500 kilovolt (KV) transmission grid to service them (Map 48). In addition, many existing lines at the 230 KV and 115 KV level will be updated.

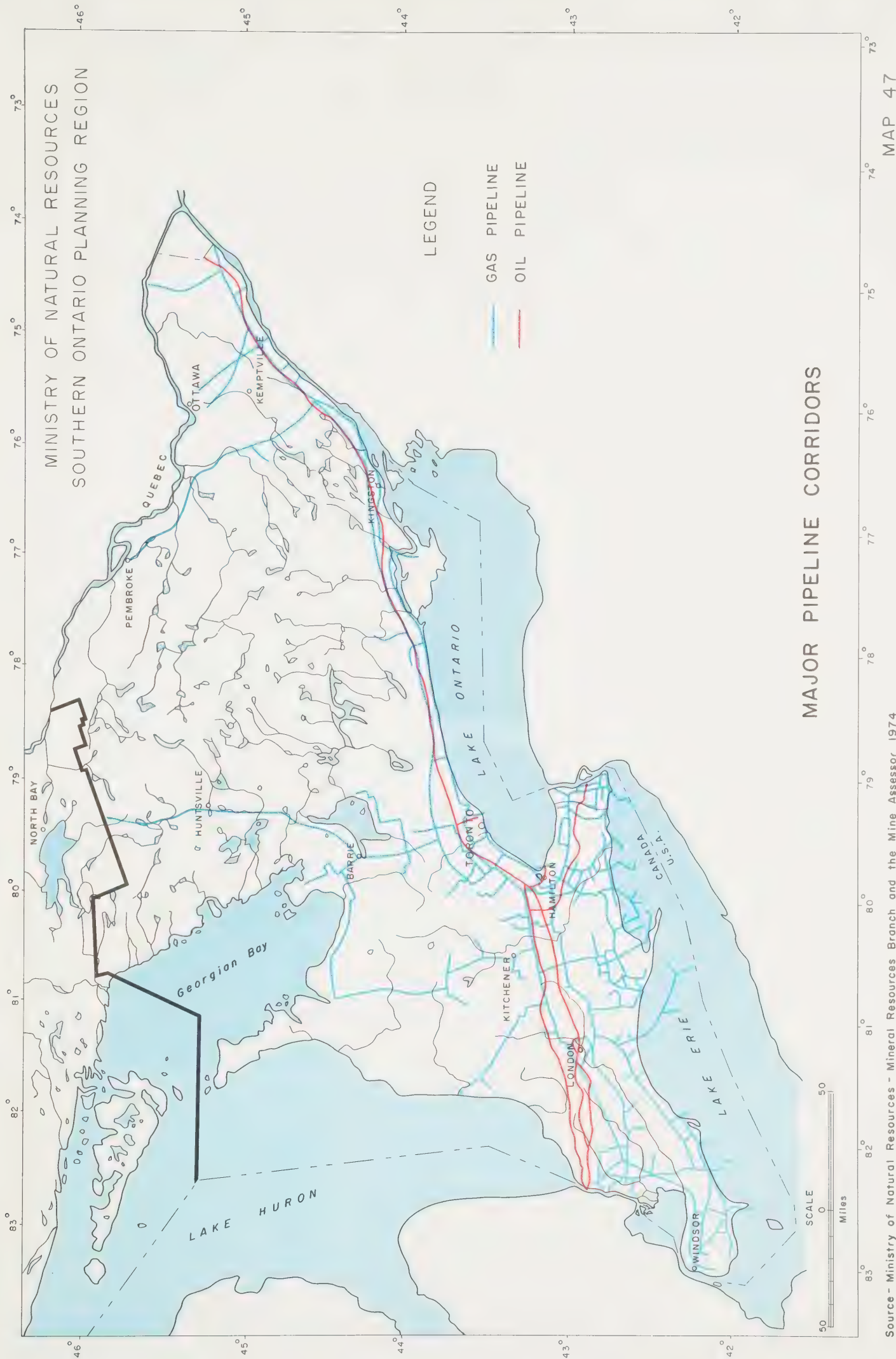
A Royal Commission on Electric Power Planning has been established to consider a wide range of social and economic factors such as provincial planning policies, the impact of new generating stations and corridors on the environment and farmlands, the economic base of and social effect on adjacent communities, commercial and residential energy requirements, industrial development and energy conservation. The Commission will also examine more technical matters, including electrical load growth, system reliability, the management of heat discharge from generating stations, power pooling and linkages with neighbouring utilities, technology and the security of fuel supplies.

g) Ministry of Culture and Recreation

This Ministry is developing a wide range of programs aimed at providing cultural and recreational opportunity. This includes the conservation, protection and preservation of historical resources.

There are three historic attractions operated by the Ministry of Culture and Recreation within Southern Ontario; Ste. Marie Among the Hurons at



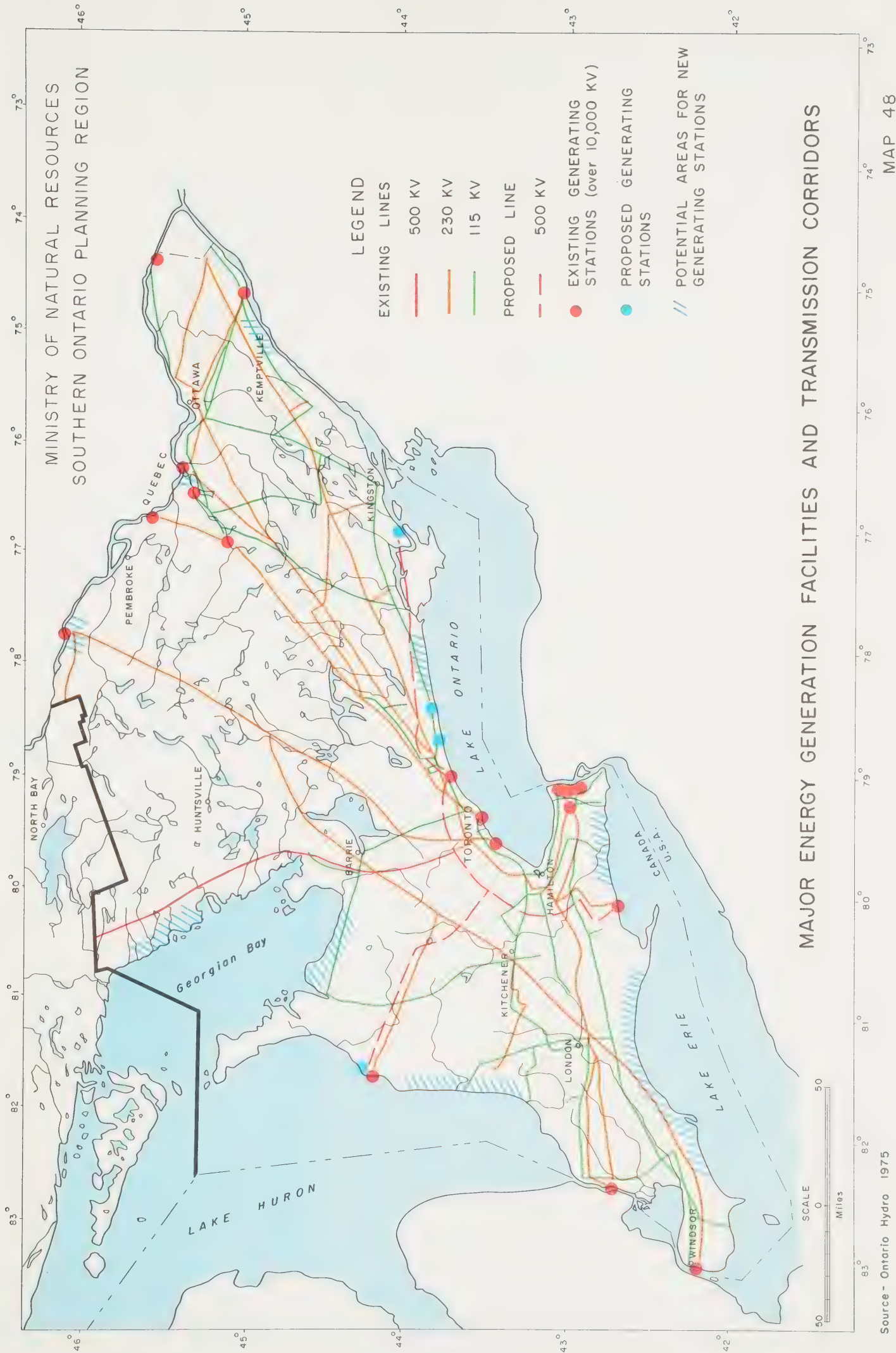


MINISTRY OF NATURAL RESOURCES
SOUTHERN ONTARIO PLANNING REGION

LEGEND

- GAS PIPELINE
- OIL PIPELINE

MAJOR PIPELINE CORRIDORS



Midland, Museum of the Upper Lakes at Wasaga Beach and the Royal Navy and Military Establishments at Penetanguishene.

h) Ministry of Industry and Tourism

A long term plan Tourism Development in Ontario, A Framework for Opportunity, is under preparation to guide future tourism development. This plan will evaluate the various areas in Ontario to indicate where the best combination of tourism resources exist in relation to demand. Priority development zones will be delineated to channel development and achieve government objectives.

i) Ministry of the Environment

The Ministry does little land use planning but acts in an advisory and review capacity for plans of other agencies. It does, however, prepare plans for water and sewage services and looks after the implementation of these plans. The Environmental Assessment Act is implemented through this Ministry.

- j) Canada-Ontario Rideau-Trent-Severn Waterway
- The Rideau-Trent-Severn waterway, along with adjacent lands, is capable of attracting and sustaining a high quality recreation experience. A Federal-Provincial Agreement involving 15 agencies has been established with the objectives of protecting, managing, and developing the resource for its continued recreation benefits.

A Secretariat to direct the achievement of Agreement objectives is established at Peterborough. Ministry planning staff associated with the project are located in the Central and Eastern Administrative Regions.

This group is preparing a policy framework and a plan for the corridor.

- k) Niagara Escarpment Commission
- Under the Niagara Escarpment Planning and Development Act a commission has been appointed and staff and funds allocated to prepare a Master Plan for the Escarpment. The plan will provide for the protection of the natural environment, and for the provision

of recreation opportunities, and will ensure that all new development is in keeping with the overall goal. The goal is to maintain the Escarpment as a continuous natural environment while seeking to accommodate demands compatible with the environment.

1) Conservation Authorities

Thirty-three Conservation Authorities have been established in Southern Ontario. This involves over 90 percent of the land that is south of the Precambrian Shield. The objects of an authority are to establish and undertake in the area over which it has jurisdiction, a program designed to further the conservation, restoration development and management of natural resources other than gas, oil, coal and minerals. Activities included are definition of flood lines and fill regulations, flood warning and contingency planning for flood emergency, the planning and construction of dams, reservoirs and channel improvements, forestry and wildlife programs and provision of recreation opportunities on Authority lands.

A comprehensive report has been prepared for some authorities which outlines the recommended plan of action. Grants to the Conservation Authorities through the Ministry of Natural Resources form a substantial portion of their budget.

m) Tourism and Outdoor Recreation Planning
Study (TORPS)

This study is a joint project involving the Ministries of Industry and Tourism; Transportation and Communications; Culture and Recreation; Treasury, Economics and Intergovernmental Affairs; Housing; and Natural Resources. The goal of the study is to foster co-ordinated tourism and outdoor recreation planning.

The major means to attain the goal is through the assembly of data and expertise related to recreation. The Ontario Recreation Survey and the Outdoor Recreation Supply Inventory have been conducted as part of this study.

n) The Federal Government

Several federal government programs affect large areas of land within Southern Ontario.

The National Capital Commission controls a greenbelt around the urban core of Ottawa. The federal government also operates three small National Parks in Southern Ontario - Georgian Bay Islands, Thousand Islands and Point Pelee.

Indian Reserves are federal lands which are planned and developed for a variety of uses to benefit the Indian people. Cottage development is one of the planned uses of some of the reserves that has major land use implications for adjacent areas.

In addition, the Department of National Defence also controls significant acreage in Southern Ontario.

The Federal Department of Regional Economic Expansion has entered into agreement for several projects in the eastern part of Southern Ontario. These include an industrial park at Brockville, and the implementation

of the provincial development strategy for the Pembroke and Renfrew area. A forest products sub-agreement is also under consideration which would provide funds for inventory work.

Transport Canada is responsible for the building and operation of airports and is developing plans for new and/or expanded facilities to meet growing needs. Currently planning studies are under way for the Hamilton and Windsor areas.

Southern Ontario also contains the majority of the 369 small craft harbours in the Province operated by the federal Department of the Environment. Most of these harbours are used primarily for pleasure craft.

VII. Some Problems and Issues

The purpose of this chapter is to identify some of the significant issues and problems in Southern Ontario that confront the Ministry of Natural Resources as it attempts to meet its objectives. Some of the issues falling within the purview of this Ministry can be examined in some detail. Other broader concerns of society can only be briefly sketched and are included to provide necessary background information.

While there is naturally a great variety of problems and issues throughout Southern Ontario, many significant ones are related to the effect of growth of population and industry on the natural resource base. Concern is universally expressed as to how the land will be used, what goods and services are most required and by whom, and under what systems decisions finally will be made. It is hoped that further steps in the planning process will focus and further define these fundamental questions.

1. Growth of Population and Industry

Southern Ontario is a major growth area in Canada with annual population increases between 1970 and 1973 ranging up to 2 percent compared with the national average of about 1 percent. Industrial earnings during the same period

have increased about 27 percent and in spite of an inflationary trend, the consumer price index has risen more slowly from 129.7 to 150.4, an increase of about 16 percent over the period.

Population projections to the year 2001 indicate a population for Southern Ontario about 50 percent above that of 1971. Massive efforts are under way in various agencies, mostly in the form of planning for urban expansion, to ensure that these increased numbers of people have adequate housing and other necessities. In recent years such growth, compounded by high individual expectations, has produced one of the highest living standards in the world accompanied by an unprecedented strain on the natural resources of Southern Ontario. Overuse and degradation of the land and water base by sheer numbers and by competing users are major issues. The Ministry of Natural Resources must become increasingly sophisticated in resource planning and management to meet its responsibilities.

2. Food Requirements

In the past and for the foreseeable future food required by an increasing population has been produced by the more intensive cultivation of some of the better agricultural land. This process has both biological and

economic limits which means that eventually more land will be required for food production. Present economics tend to encourage agricultural land to be left idle or permanently transferred to other uses. Recently the Province has articulated a number of measures which if fully implemented would help to retain a capacity to produce food products which may be needed.

3. Contaminants in Fish

Polychlorinated biphenyls (PCBs) continue to pose problems for provincial fisheries, particularly in the lower Great Lakes. The results of intensive sampling programs led Ontario and Canada to close the commercial fishery for coho and chinook salmon on Lakes Huron, Erie and Ontario. The fishery for eels and channel catfish on Lake Ontario was also closed. Sampling programs on the Great Lakes and other waters are continuing to evaluate the need for further action. The 1975 health warning remains in effect. This warning, addressed particularly to anglers, suggested that people eat only occasional meals of salmon and that pregnant women should not eat any.

Recently, the insecticide mirex has been found in Lake Ontario fish, in some cases at levels exceeding the United States health guideline of 0.1 ppm. The establishment of a Canadian guideline is currently under review. Ontario has released the results of extensive testing for mirex fish found to contain more than 0.1 ppm. In general, those species with elevated levels of mirex also contain high levels of PCBs. Consequently, restrictions placed on commercial fishing in Lake Ontario because of PCBs have limited the catch of mirex-contaminated fish. Health warnings continue on Lake St. Clair since recent analyses of sediments by the Ministry of the Environment show no significant reductions in mercury levels. Mean mercury levels in the 1975 samples from Lake St. Clair were for the most part still above the acceptable level of 0.5 ppm. Recently similar warnings were necessary for lakes St. Lawrence and St. Francis.

The co-operative collection and analyses program among the ministries of Health, Environment and Natural Resources is expected to look at more than 4,000 fish annually from every region in the province. As the sampling program extends to additional waters, it is possible that

more contaminated fish will be found, posing severe problems for both the sport and commercial fishery.

Lake Trout Lakes

Out of the 250,000 lakes in Ontario, only 2,000 support lake trout, and only half of these are capable of supporting good populations. Of the total number, some 504 are in Southern Ontario.

The fish populations of these lakes typically consist of relatively few species, mostly salmonids such as lake trout, lake whitefish and lake herring. The lakes themselves tend to be deep and cool with limited shallow water areas. These characteristics make these lakes especially appealing for cottage and other types of development.

Even with good control of domestic sewage, shoreline development on these lakes inevitably leads to accelerated eutrophication, since the simple act of land clearing has been shown to contribute increased phosphate run-off. The fertilization of gardens, excreta from domestic pets, insect spray and careless humans all contribute to the nutrient and contaminant load. Eutrophication can

lead quickly to oxygen depletion in the deeper waters of the lake. When the oxygen debt builds up in summer, the cold water species suffocate since they cannot tolerate the warmer surface waters even though these waters are well oxygenated. The entire fishery then collapses since there are few if any warm water species to take their place, and the number of these is severely restricted by lack of suitable shallow water habitat. The lake is thus left without a fishery since no other species are available to fill the void, even by stocking.

In order to protect the lake trout lakes of Southern Ontario, it will be necessary to restrict development on some and eliminate it entirely on others. The lakes as yet undeveloped should be managed for a limited entry high quality fishery if we are to conserve this resource for the enjoyment of future generations.

4. Housing

Some 86,000 new dwelling units were under construction in Southern Ontario during 1973. These can be translated into demand for forest products, metals, sand, gravel,

clay, limestone, glass and petroleum products. It also means a heavy demand for land where water, sewage and electrical services can be provided.

The Ministry of Housing proposes to smooth cyclic trends in the housing industry and has a provincial target of 100,000 housing starts annually. Meeting these demands is, in part, the business of the Ministry of Natural Resources. In addition, increasingly, the Ministry must influence the location of this housing production in order to protect the land and water required for its own programs.

5. Aggregate Supply

The growing problem of aggregate supply involves such concerns as a non-renewable resource, rapidly increasing demands, shortages of some materials near major urban demand centres, institutional constraints to production, and land uses subsequent to extraction.

There are ample deposits within Southern Ontario but some local shortages are beginning to develop. Because transportation costs are rising rapidly natural deposits close to centres of construction activity are necessary if building costs are to be kept from rising unduly.

In eastern Ontario suitable deposits are naturally restricted which increases the value of the existing ones, especially those near Ottawa. In the Toronto Centred Region massive usage has reduced the very large supply that once existed. Many valuable deposits in this and the London area have been rendered unavailable by surface construction and the reluctance of local people to allow mining activity. It will be necessary to identify important aggregate sources and ensure an adequate supply at the lowest possible price taking other land uses into account. There is little point in keeping aggregate cost low if as a result the price of a serviced lot escalates disproportionately because suitable land is scarce. Government policies and economic factors controlling the use of agricultural and recreational land may complicate the land use picture as well.

It is possible that maintenance of aggregate supply will require relatively flexible regional planning policies melded with sensitive local planning rather than land use decisions at the strategic planning level. It is likely that scale will make inventory information at this level too general to allow sufficiently precise land use designation.

6. Wood and Wood Product Supply

The ability of private land to provide the expected major portion of total usage should be carefully examined. The private forest is generally conceded not to be in a very productive condition from a quality and stocking standpoint so that some of the higher grade material of certain species are in short supply at various times and locations. Also because of an increasing ownership of forest land by urban based people there may be some reluctance to sell timber in the future. In any case private forest land in Southern Ontario is in critical need of management to achieve the Ministry's forest production targets.

On both private and Crown land a major utilization problem occurs in heavy hardwood areas, particularly on the Precambrian Shield. Most stands are cut under a selection system or a shelterwood cutting system. To ensure regeneration in both these systems, it is necessary to remove not only the saw and veneer logs but also a significant quantity of low-grade material to give proper spacing to residual trees and to create openings for regeneration which will occur naturally. Since markets do not exist for much of this low grade material, it is

not being cut and hence the growth on residual trees and regeneration do not occur in sufficient quantity to ensure growth targets are met.

There is also a problem of high-grading mixed wood stands for conifers. The residual birch and poplar left standing prevent the regeneration of the area to coniferous species. Such areas cannot be managed to produce the desired yield of 20 cubic feet per acre per year.

Demands on Crown land, particularly those associated with recreation, will make timber production difficult and expensive and in some areas impossible. Provincial parks and park reserves, reserves around lakes and rivers and roads, areas associated with trails of various types, sensitive areas, and wildlife needs in special locations are examples of land uses that place constraints of differing severity on timber production.

In terms of allowable cut, timber is available to meet much of the projected demand within Southern Ontario. However, forest land may be used to serve other uses as well. It is doubtful at this time if any large proportion of the forested area can be devoted purely to timber production. Available wood supply therefore

will depend upon how well harvesting and other forest uses can be integrated and upon whether land owners can be induced to include sustained wood production in their objectives.

7. Outdoor Recreation Demand

It is very difficult to arrive at dependable statistics in the broad field of outdoor recreation. However, the available information indicates an increase in participation in most recreation activities of over 5 percent annually. This will result in a doubling in participation within 15 years. It is very difficult to see how such an increase could be accommodated given the present ways of making opportunities available, the recreational habits of the public, and the quality of experience desires.

While it is true that this Ministry is responsible for only part of the recreational complex its policies will have a major impact on other Ministries, other levels of government and the private sector. Therefore, definition of the nature and dimension of the increasing outdoor demand must begin with the development of policy framework to guide the actions of this Ministry and others. There are many other problems and issues but their solution depends upon resolving the basic question of outdoor recreation policy.

8. The Environmental Question

The rapidly increasing needs of people for food, housing, utilities and outdoor recreation make competing demands on the land and water resources. As these demands intensify a number of effects develop and eventually come under public scrutiny.

An intensifying human activity in Southern Ontario has increased the amount and complexity of waste products that must be buried, diluted, burned, re-cycled or dealt with in the most expedient and inexpensive way possible and often public resources must be expended in the process.

Sewage, both domestic and industrial, is introduced into public waters or land must be purchased for landfill sites. The air is utilized to diffuse smoke, motor exhaust and other pollutants. The problem of over-use may result, causing reduced public enjoyment of natural resources or even danger to public health.

Examples are legion. Should cottage owners be allowed to affect fish populations through adding nutrient material to a lake, thus reducing recreation opportunities formerly available to the public? Should private land be used in such a way as to reduce the beauty of the scenery

enjoyed by the many? Should the land base, essential as it is for the production of resources and recreational opportunities, be committed for long periods of time to housing and other urban development? The production of essential electric power may result in loss of public benefit by affecting the level or temperature of water and the transmission of power may remove some land from agriculture and forestry or affect the lives of resident wild animals and birds. The basic environmental issue appears to revolve around the nature of the rights of certain individuals or segments of the population to use public property.

9. Ownership

Who is to receive the benefits of land ownership. Those who receive them now react strongly to any interference with their present rights, but as the population grows and as those not holding land become numerous, the demand for more public benefit from land increases. In a similar way and for similar reasons, foreign ownership of land or resources comes to be recognized as one of the factors limiting local opportunity to enjoy the pleasures and profit of land ownership.

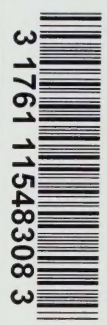
10. Public Participation

No enumeration of problems and issues in Southern Ontario would be complete without mentioning those implicit in the words "public participation". The Joint Committee on Economic Policy, a body formed to assist in the development and co-ordination of future economic policies, stated in its recent report, "It will also be necessary to ensure that new policies include the opportunity for public participation so as to enrich the democratic process and meet the rising expectations of citizens for a strong voice in decision making".¹ A paper by the staff of the Committee on Government Productivity also advised, "Governments should devote considerably more resources to planning and implementing ways of encouraging positive forms of (public) participation".² The Man and Resources Conference also recognized the need and proposed a number of recommendations for government action.³

¹ Report of the Ontario Joint Committee on Economic Policy, Directions for Economic and Social Policy in Ontario - (Toronto: Policy Planning Branch, Ministry of Treasury, Economics and Intergovernmental Affairs, August 1974), p.3.

² A Working Paper Prepared for the Committee on Government Productivity, Citizen Involvement (Toronto: C.P.G.P., April 1972), p.46.

³ Canadian Council of Resource and Environmental Ministers, Proceedings Man and Resources Conference, November 18-22, 1973 (Toronto: C.C.R.E.M. 1974) p.7-15.



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